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or how to do High Throughput Purification

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Since its creation in 1970, by Mr. Jean Boch, PhD in Organic Chemistry (currently Chairman of the Supervisory Board), and Mrs. Colette Boch, Interchim® has never stopped striving toward ever higher standards to offer you products that live up to both your ambitions and your day-to-day challenges.

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Our website **www.interchim.com** provides you access to over 6.5 million items, their prices are daily updated. This is a unique platform you can use to find the products critical to your research in the fields of Fine Chemistry, Analytical Sciences and Biosciences.

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Beyond a rigorous manufacturing or selection of the best **Consumables & Instruments**, it is vital for Interchim to produce the most relevant application, technology, or product solution so that you can achieve your goals, or better yet, surpass them. For this, our technical and support services are at your disposal to share their knowledge and provide their advice.

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Even though laboratories around the world are colored blue and fly our banner, **Interchim®** is a multinational company the heart of which is headquartered in France. You can take advantage of our products and services in over 50 countries, either directly, as in France, Germany, Austria, and Belgium, or through our subsidies, as in the United States and the United Kingdom, or in partnership thanks to our distributor networks.

In a world in perpetual movement, our aspirations remain constant: to support you in developing all your projects as a partner in your success so that today's challenges become tomorrow's successes.

Lionel Boch,
Président du directoire

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General Summary

A THEORICAL PRINCIPLES

B METHOD DEVELOPMENT & OPTIMIZATION

C STATIONARY PHASES & COLUMNS

D INSTRUMENTATION

E CONSUMABLES & ACCESSORIES

F APPLICATIONS

G TECHNICAL TIPS

H TROUBLESHOOTING

I INDEX

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www.flash-chromatography.com

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3 DIVISIONS

to support the success of your projects

3 ACTIVITIES

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Distribution
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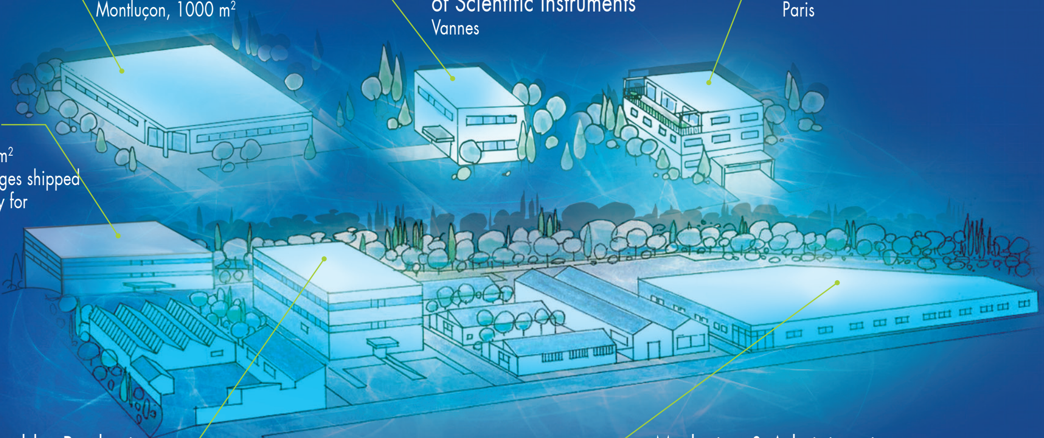

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The multinational moreover consolidates its position as **leader in the Analytical Sciences and chromatography**.

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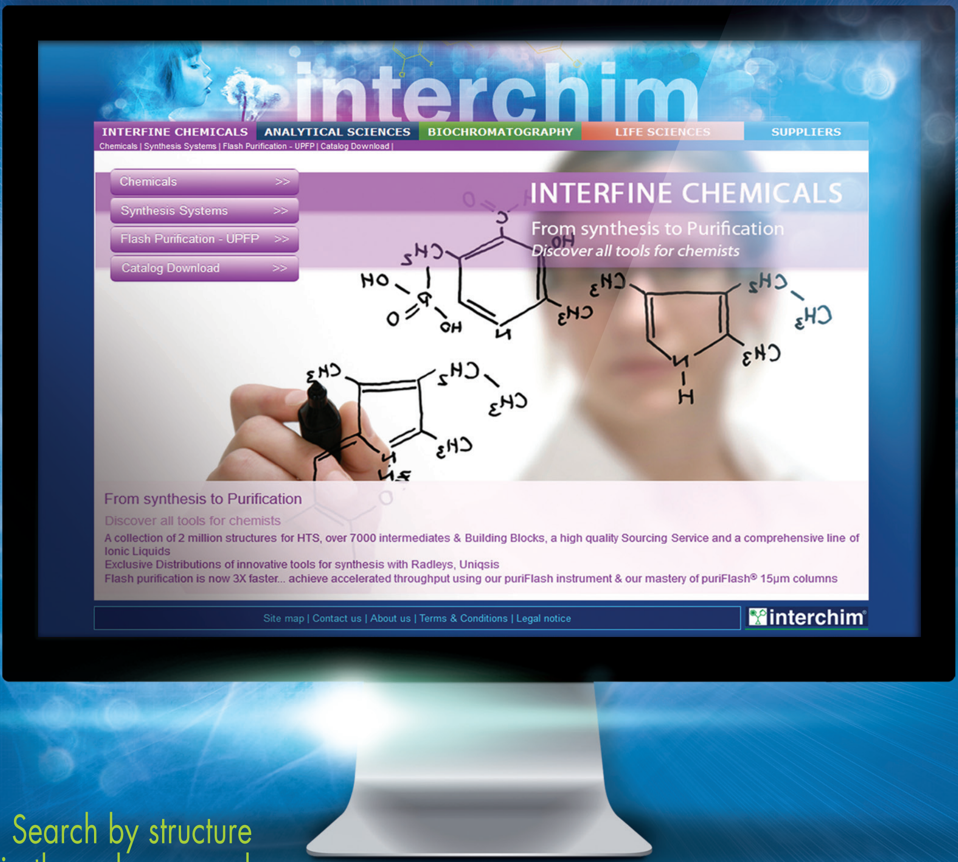

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via the e-chem search :

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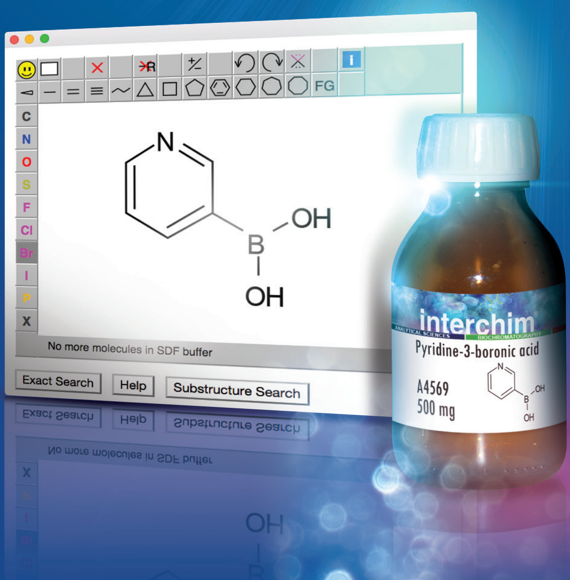

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Sample preparation Sample storage
Transposition of Thin-Layer Chromatography (TLC)
Stationary phase **FLASH PURIFICATION** Theory & Practice
Inter & Intra company Optimizing purifications on Flash cartridges

The list of topics covered is non-exhaustive and constantly changing so please, don't hesitate to contact us.
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- Coating
- Grafting on affinity gel
- Antibody purification
- Preparation of buffer solution, protein reagent, saturated solutions

Chromatography
- Preparation of the mobile phase
- Purification of the analysis support medium
- Impregnation of the analysis support medium
- Preparation and custom packaging of analysis support medium in different supports (glass, PP, stainless steel, etc.)

Chemistry
- Aliquoting of products in tubes, microplate, etc.
- Preparation of synthesis intermediate

Miscellaneous
- Aliquoting of stabilizers in vials
- Capping of vials
- Kit assembly with or without preparation of the main component

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Our scientific experts are here to share both their knowledge and expertise and advise you.
Please don't hesitate to contact us.

Publications

We are pleased to present you all the publications involving our puriFlash® range.
This list of documents shows the wide range of possible applications, with our columns or instruments.

1- Mass spectrometry guided purification for efficient isolation of natural products at semi-and preparative scale

A Azzollini, EQ Ferreira, N Bohni, D Guillarme… - Planta Medica - thieme-connect.com

... In particular, a single quadrupole mass spectrometer coupled to a semi-preparative chromatographic system (PuriFlash® – MS) was found a promising tool to increase the efficiency of the isolation of constituents of interest. ...

2- Optimized MS-based isolation strategy for rapid targeted purification of antifungal compounds

A Azzollini, J Zhang, Q Favre-Godal… - Planta Medica - thieme-connect.com

... In particular, a single quadrupole mass spectrometer coupled to a semi-preparative chromatographic system (PuriFlash® – MS) was found a promising tool to increase the efficiency of the isolation of constituents of interest. ...

3- A Comprehensive Review for the Learners and Users: Preparative High Performance Liquid Chromatography

BG Jadhav, AM Jadhav, AR Shirode… - International Journal of …, 2014 - pmindexing.com

... 3.3 Preparative high pressure liquid chromatography-flash chromatography (PuriFlash®). The commercially available instrument puriFlash® (Interchim laboratory suppliers) combines the simplicity of Flash ... reverse phase in less than 10 seconds. The puriFlash software ...

4- CHIMIA Report/Company News

B Easy - chimia.ch

... If you routinely purify more than a couple of grams of compound our PuriFlash® development scale cartridges will save you both time and money. ... PuriFlash™ PuriFlash F development flash cartridges are excellent cartridges for use with com- pression module systems. ...

5- An antedrug of the CXCL12 neutraligand blocks experimental allergic asthma without systemic effect in mice

F Daubeuf, M Hachet-Haas, P Gizzi, V Gasparik… - Journal of Biological …, 2013 - ASBMB

... Thin-layer chromatography was performed on silica gel 60F 254 plates. Flash chromatography was performed on silica gel (puriFlash® 30µm, Interchim®) or C18 (puriFlash® 30µm, Interchim) prepacked columns on a SpotII Ultima from Armen. ...

6- Fluorogenic substrates, methods of making the substrates, and methods of detecting glycosidase activities

A Drevelle, S Ladame, M Najah… - US Patent App. 14/ …, 2014 - Google Patents

... The obtained solid is purified once by reverse phase chromatography on a pre-packed silica column (eluent: pure water, cartridge PURIFLASH® INTERCHROM C18) and then subsequently with a purification apparatus BIOTAGE-ISOLERAONE (eluent: pure water, cartridge ...

7- Sulfonated coumarins, their synthesis, fluorogenic substrates resulting from grafting of these coumarins on sugars, method for obtaining these substrates, and their …

A Drevelle, S Ladame, M Najah, E Mayot - US Patent 8,716,496, 2014 - Google Patents

... The obtained solid is purified once by reverse phase chromatography on a pre-packed silica column (eluent: pure water, cartridge PURIFLASH® INTERCHROM C18) and then subsequently with a purification apparatus BIOTAGE-ISOLERAONE (eluent: pure water, cartridge ...

8- ПЕПТИДНЫЕ ИНГИБИТОРЫ АГРЕГАЦИИ ТРОМБОЦИТОВ

АЮ Лизунов, ЕА Батуев, ЛА Павлова - 2013 - scientific-notes.ru

... препаративного жидкостного хроматографа PuriFlash 450 (InterChim). Условия ВЭЖХ: катридж Interchim PF-C18 (20g), 15 мкм. ... Очистку пептидов осуществляли с помощью высокоэффективного препаративного жидкостного хроматогрофа PuriFlash 450 (InterChim). ...

9- HPLC-based activity profiling for antiplasmodial activity in the traditional Indonesian medicinal plant Carica papaya L.

T Julianti, M De Mieri, S Zimmermann… - Journal of …, 2014 - Elsevier

... Semipreparative separations of alkaloids 5–8 were carried out with a PuriFlash® 4100 system consisting of mixing HPLC pump, UV detector dual length DAD, fraction collector, and a sample loading module (Interchim; Montluçon, French). ...

10- Advanced glycation inhibition and protection against endothelial dysfunction induced by coumarins and procyanidins from Mammea neurophylla

BT Dang, C Gény, P Blanchard, C Rouger, P Tonnerre… - Fitoterapia, 2014 - Elsevier

... The samples were adsorbed to silica gel Si60 prior to introduction and a DASi™ sample injection module (Agilent Technologies) was used. For MeOH bark extract, Puriflash® PF-30SiHP/4G cartridges (Interchim, Clichy, France) were used and the flow rate was 5 mL/min [64]. ...

11- Development of a simple recycling process for evaporated organic solvent after preparative supercritical fluid chromatography using powdered activated charcoal

SB Thomas, WW Barnhart, HA Eastwood, C Nichols… - RSC Advances, 2014 - pubs.rsc.org

... PA). XBridge™ C-18 (100 × 3.0 mm id, 3.5 µm) and puriFlash® Dry-load empty 200G flash (133 × 60 mm id) columns were purchased from Waters Corporation (Milford, MA) and Interchim (San Pedro, CA), respectively. Hydrophobic ...

12- A selective lead sensor based on a fluorescent molecular probe grafted on a PDMS microfluidic chip

D Faye, JP Lefevre, JA Delaire, I Leray - Journal of Photochemistry and …, 2012 - Elsevier

... Mass spectra were performed at IMAGIF Institute (Gif sur Yvette, France). Column chromatographies were performed using puriFlash® (Interchim) or Spot 2 Flash System (ARMEN) with prepacked column Sepra Si 50-60 Å. ...

13- Highly Efficient Synthesis of Globular (Bola) amphiphilic [5: 1] Hexakisadducts of C60

F Hörmann, M Brettreich, W Donaubauer… - … -A European Journal, 2013 - Wiley Online Library

... 254 . Detection: UV lamp or KMnO 4 chamber. Flash chromatography (FC): Interchim puriFlash 430. PuriFlash Column 15 Silica HP-Silica 15 µ (80.0 g). UV/Vis spectroscopy: Varian Cary 5000 UV-Vis-NIR spectrophotometer. ...

Refer page F.20 to see the complete list of these publications.

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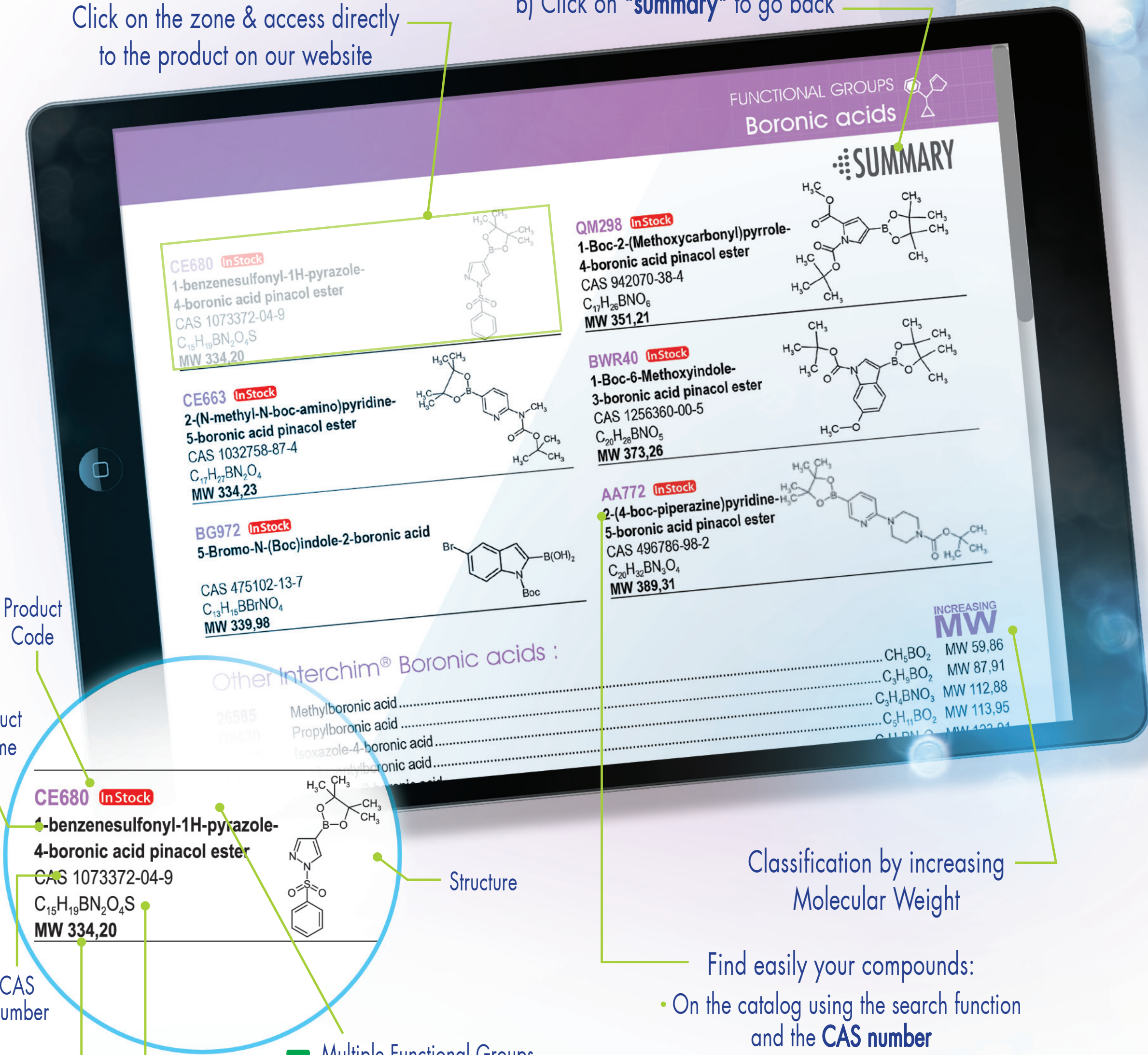

Product Code

Product Name

CAS Number

Molecular Formula

Molecular Weight

Structure

- Multiple Functional Groups
- Nitrogen-based Functional Groups
- Sulfur-based Functional Groups
- Oxygene-based Functional Groups

Classification by increasing Molecular Weight

Find easily your compounds:

- On the catalog using the search function and the **CAS number**
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Theoretical Principles

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Origins & evolution of chromatography

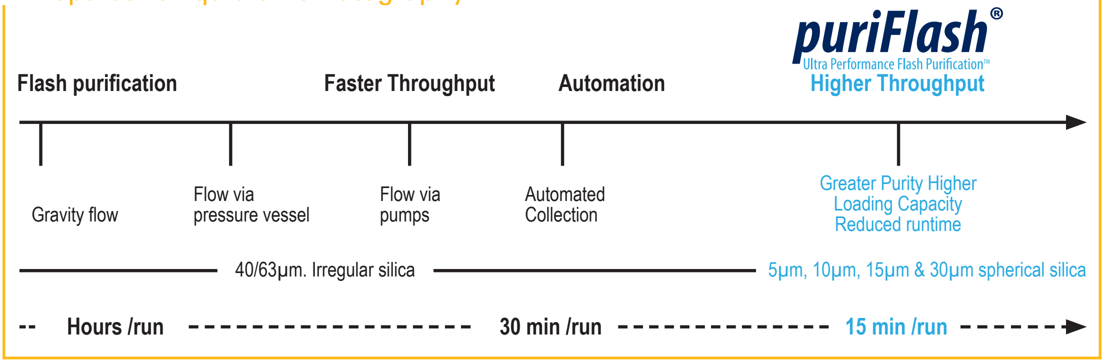
The term “**chromatography**” originated in 1906 thanks to Russian botanist Mikhail Tswett. In 1901, he washed an organic solution of plant pigments through a vertical glass column packed with an adsorptive metal. He discovered that the pigments separated into a series of colored bands on the column, divided by regions entirely free of color.

In 1930, chemists Richard Kuhn and Edgar Lederer used this technique to separate different biologically materials. Since that time, the technique has advanced rapidly and column chromatography is now used widely in many different forms. The column itself has also been refined over the years, according to the type of chromatography, but fulfils the same essential separating function in all forms of column chromatography.

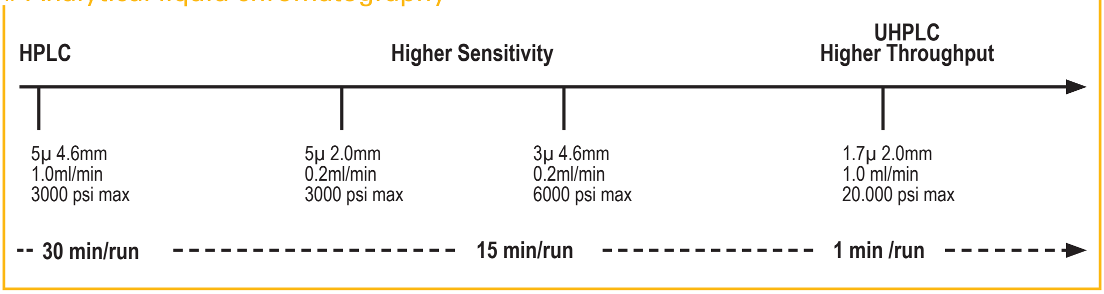
In 1964, the American chemist J. Calvin Giddings refined liquid chromatography to achieve separations of different molecules. This was the origin of the technique now known as High Performance Liquid Chromatography (HPLC), and relied on very small particles size in small diameter columns.

From the mid 80's a number of scientists' as Verzele & Dewaele, Bildlingmeyer, Unger, … published articles dedicated to Preparative Liquid Chromatography on the technique itself, the columns and instruments technology.

Preparative liquid chromatography



Analytical liquid chromatography



Since 1995, Interchim® is an essential actor of the purification market.

In 2008, Interchim® launched puriFlash® a range of advanced automated instruments and consumables supported by the Ultra Performance Flash Purification concept who has revolutionized the purification practices.

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In combination with more than 50 different chemistries, 12 puriFlash instruments are available to perform purification of small Organics Molecules, Natural Products, Peptides, and Proteins.

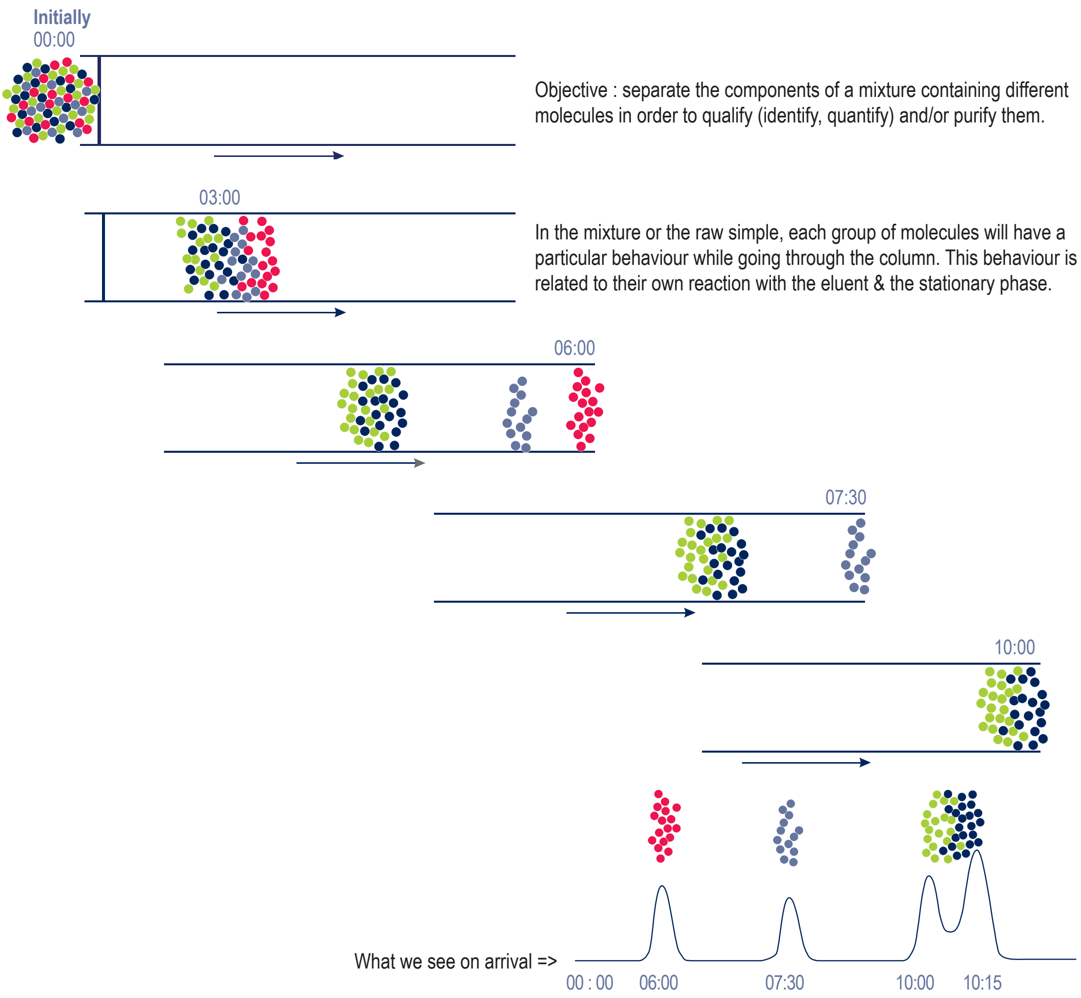
Chromatography principle

Liquid Chromatography is a separation technique.
It can be dedicated to identify and quantify compounds present in a mixture, this is the analytical mode. Very attractive when the goal is to get isolated a pure product from a more or less complex mixture, this technique is then called preparative liquid chromatography and seems to be today the most popular way for purification.

Liquid chromatography manages compromise between multiple parameters and primarily stationary phase, eluents and compounds of interest.

Compounds are eluted by a liquid mobile phase (eluent) in contact with a stationary phase (fixed). The migration speed of the species contained in the sample depends on the interactions with the stationary phase (adsorption or desorption phenomenon), the mobile phase or their solubility and polarity.

4 groups of products in different quantities



What is Purification?

Definition

There are many different purification techniques: distillation, crystallization, filtration, … and chromatography.

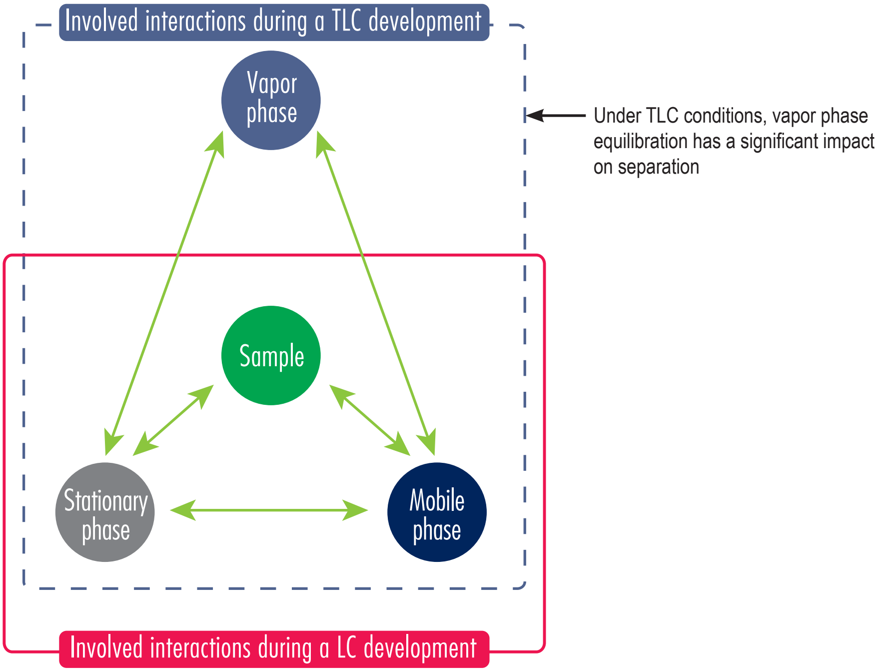
They all have the same goal purify and recover samples, whether an organic or biochemistry synthesis step.

Purification by liquid chromatography is always a challenge and there is often a compromise to obtain the desired purity, loading and throughput. To improve efficiency in delivering pure compounds, chemists may balance between purity, run time and environmental considerations. This delicate balance is often necessary for both crude and final purification.

Principle of purification by Preparative Liquid Chromatography

First of all, the separation of the compound(s) of interest must be developed under analytical experiments. Separation can be obtained if the compound(s) have very different affinities (polar, π- π, hydrophobic, ions exchange interactions) for the mobile phase and stationary phase. The chemist or biochemist has to define the level of purity for its compound(s) of interest.

Depending on the characteristics of the sample, these "analytical"methods developments can be done either by TLC or HPLC.



The mobile phase composition follows eluent strenght rules (Snyder scale - see chapter...) which are present in the whole liquid chromatography principle: TLC, HPLC column, Flash/Prep column. Only TLC have an additional parameter: vapor phase equilibration, involving a correct migration.

Beyond these interactions, other factors are determining in order to obtain quality purifications. As such, the quality of your purifications will depend on the column geometry, the injection technique (liquid injection or solid deposition).

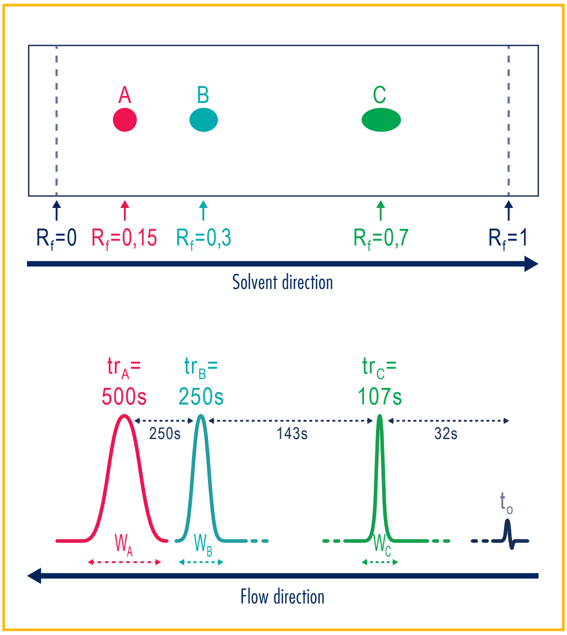
- **Transfer TLC to Purification:**

The TLC can be used as a predictive tool for purification method but users have to take care of the adsorbent features differences between the plate and the column, the difference of the eluent migration capillarity for TLC vs. dynamic for LC, the TLC silica binder.

The ΔRf must be optimized to achieve the best transposition possible.

The purification column size must be linked to crude sample mass.

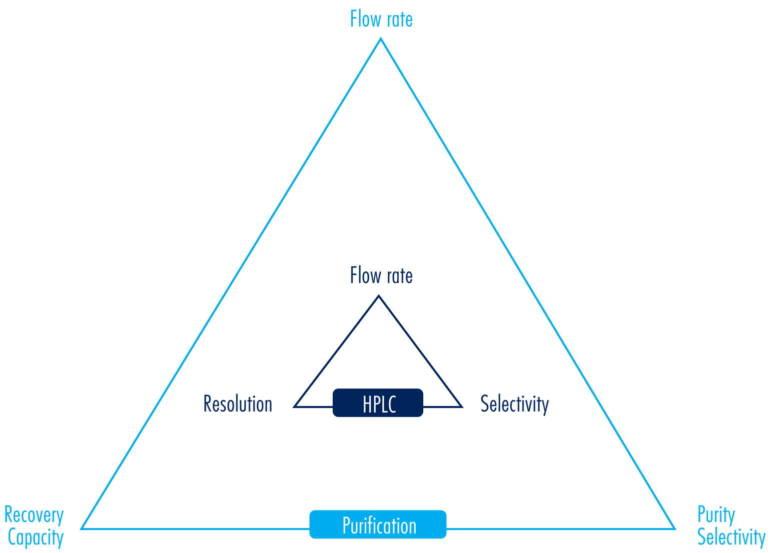
Interchim® TLC mobile app. couple to Genius, our artificial intelligence system, makes a fully automated process from TLC plate image to parameters set-up into the software till a Ready-to-use Purification.



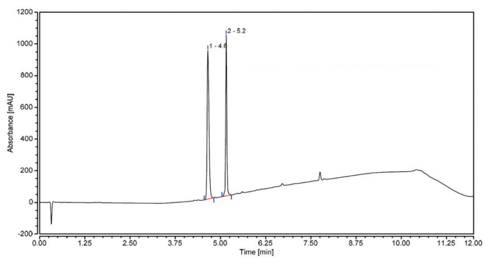
The ΔRf (**frontal ratio**) optimization allows the best transposition on the Flash/Prep column.

- **Transfer HPLC to Purification:**

The transposition HPLC to Purification is direct if the adsorbent features and the elution conditions of the HPLC column are correlated to those of the purification column. The purification column size must be linked to crude sample mass.

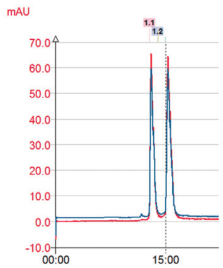


HPLC

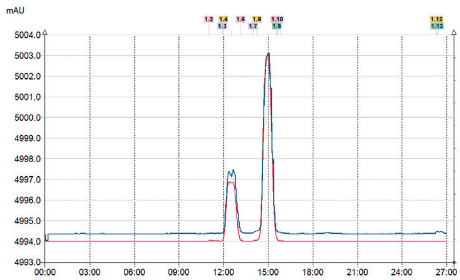


Analytical conditions
HPLC Column: Core-Shell C18 50x2.1mm 2.6µm
Liquid injection 5µL

Purification



Purification
puriFlash® 15µm
C18AQ - F0025
Liquid injection 900µL

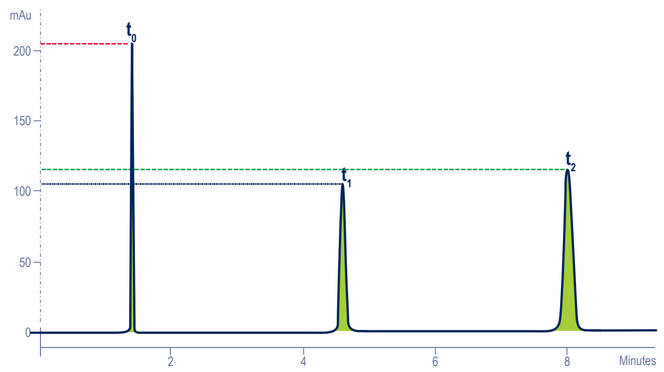


Overload
puriFlash® 15µm
C18AQ - F0025
Liquid injection
2mL

Advantages of Preparative Liquid Chromatography

This technique is really selective, and can lead in a single shot to a collection of a 100% pure compounds.
Versatile, it matches a large number of applications, class of compounds.
It combines numbers of detection techniques to maximize, first the detection of the whole compounds inside the sample, the control of their purity and their identification.

Fundamental Notions of Chromatography



Retention time

The time between injection and the appearance of the peak maximum. Corresponding to the time needed by the compound to interact with the stationary phase and the eluent.

t_0 = The elution time of an unretained peak (corresponding to the void volume of the column).

t_1 = retention time of the compound 1

t_2 = retention time of the compound 2

Adjusted retention time

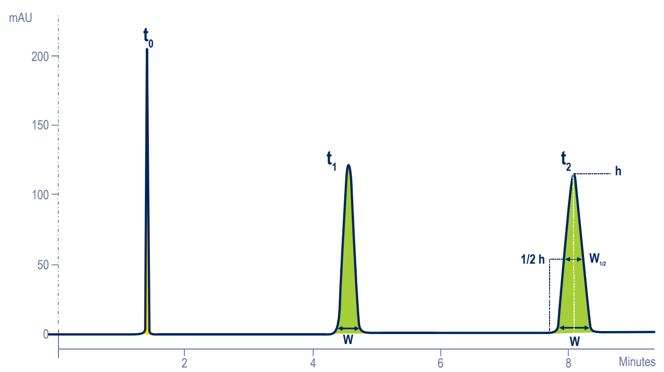
$t'_1 = t_1 - t_0$ $\qquad$ $t'_2 = t_2 - t_0$

Retention factor

$k_1 = \frac{t_1 - t_0}{t_0}$ $\qquad$ $k_2 = \frac{t_2 - t_0}{t_0}$ $\qquad$ The rention factor, or capacity factor,
k is the degree of retentivity of a peak compare to an unretained peak.

Selectivity

$\alpha = \frac{k_2}{k_1}$ $\qquad$ The relative retention value, α, compares the degree of retentivity of one peak with another.



Efficiency

N: Theorical plate number

$N = 16\left(\frac{t_1}{w}\right)^2$ $\quad N = 5.54\left(\frac{t_1}{w_{1/2}}\right)^2$

The width (W) of the chromatographic band during elution from the column is usually measured at the baseline by drawing tangents to the inflection points on the sides of the Gaussian curve that represents the peak.

H: Height equivalent to a theorical plate

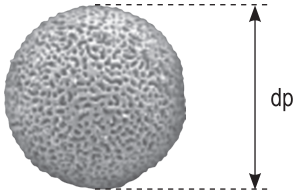
L: Column length

H = L/N

h = H/dp

h: reduced plate heigth
(this value can give an idea of the packing quality of the column)

dp: particle diameter of the stationary phase



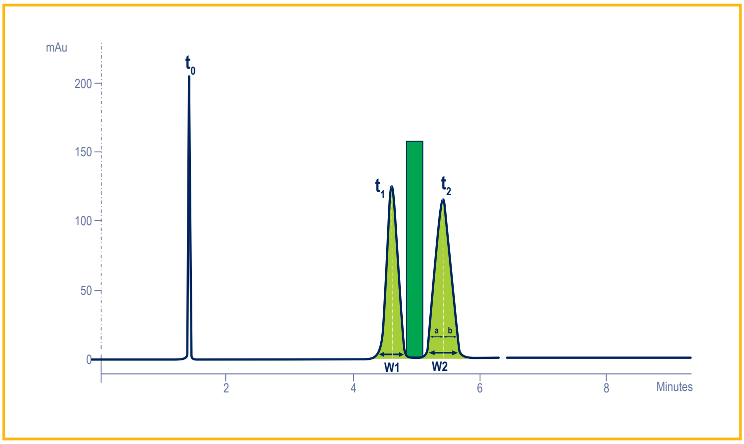
Stationary phase particle

Asymmetry

Asymmetry: $As = \frac{b}{a}$ at 10% of the peak height

Tailing factor: $Tf = \frac{a + b}{2a}$ at 5% of the peak height

Resolution



$Rs = 2\left(\frac{t_2 - t_1}{w_1 + w_2}\right)$

This value caracterizes the baseline width from the end of the 1st peak to the beginning of the 2nd.

A value of 1.5 is considered sufficient for baseline resolution for 2 peaks of equal height, but in that case the purity is not 100%.

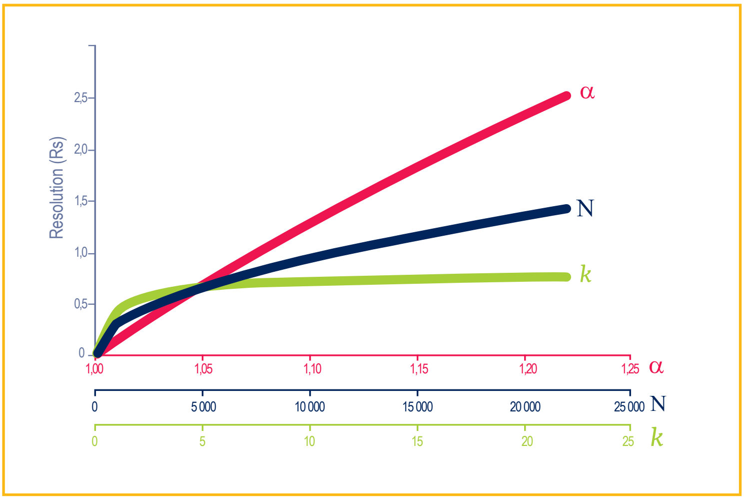
For 2 close peaks $w_1 \approx w_2$

$$Rs = \frac{1}{4}\sqrt{N}\left(\frac{(\alpha - 1)}{\alpha}\right)\left(\frac{k_2}{1 + k_2}\right)$$

Increasing efficiency by using a smaller particle size

Enhance selectivity by modifying elution conditions and adapting stationary phase

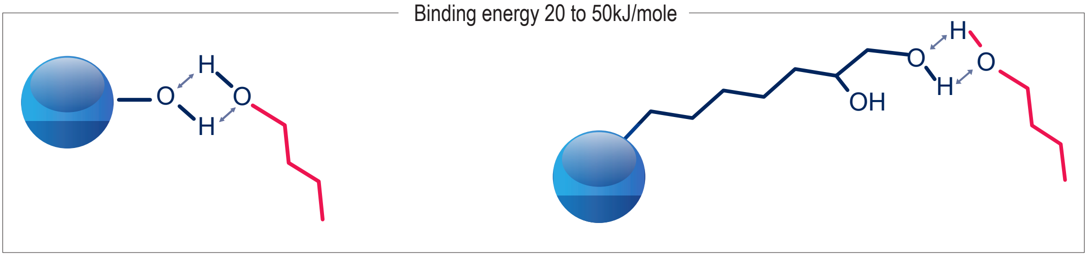
Keep this value betwwen 2 and 10 by adjusting the retention time



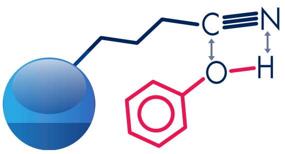
Interaction mechanisms

Polar phase interactions

Binding energy 20 to 50kJ/mole



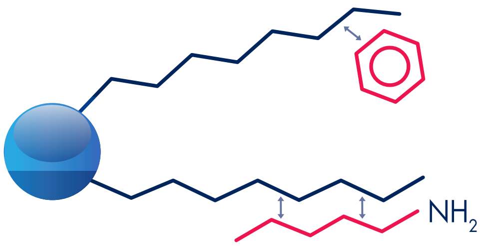
Binding energy 8 to 15kJ/mole



⟷ Dipole-Dipole attraction

Non polar phase interactions

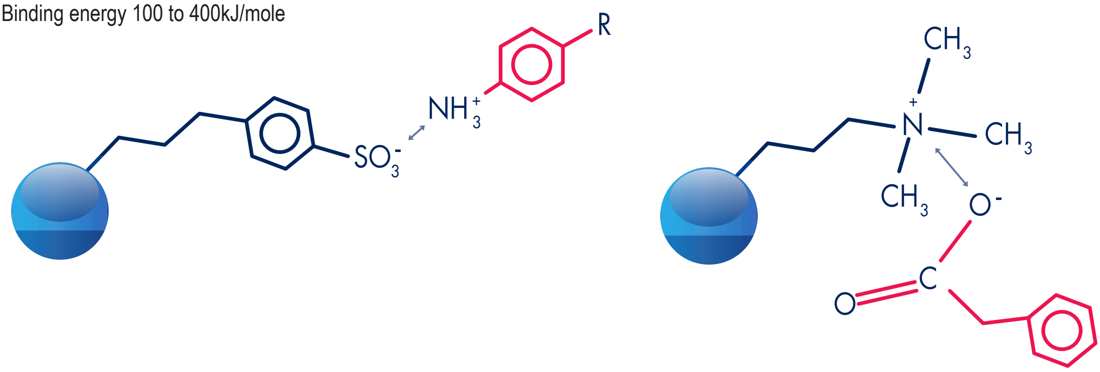
Binding energy 2 to 10kJ/mole



⟷ Dispersion interaction

Electrostatic interactions

Binding energy 100 to 400kJ/mole



⟷ Electrostatic interaction

Adsorbants polarity classification

POLARITY ↑

Normal Phase (NP)	
Si	Silica
NH_2	Amino
OH	Diol
CN	Cyano (nitrile)

Reverse Phase (RP)	
CN	Cyano (nitrile)
C1	Methyl
C4	Butyl
C8	Octyl
C18	Octadecyl (ODS)

This chapter was conceived and written in collaboration and under the supervision of Professor A.Tchapla (IUT Orsay - University Paris Sud).

Purpose:
- Determine the chromatographic conditions for the purification of a sample.
- Understand how to choose the solvent which completely solubilizes a sample (for solution or liquid-liquid extraction)

This requires the knowledge of the parameters that lead to the notion of "polarity of molecules". The polarity is the molecular property that allows to evaluate how and with which intensity one molecule attracts another (molecular interactions), and thus to choose the solvent of a sample but also the chromatographic conditions for the purification.

Polarity

Purpose:
- Predicting the polarity of a substance from its molecular structure.

The polarity of an organic molecule is the property that allows either to predict or to evaluate the nature and the strength of the molecular interactions occurring between two molecules whether they are identical (pure material) or different (in mixture) from one to another.
Polarity is the consequence of the development, accessibility and intensity of the totality of the partial electrical charges developing on the surface of organic molecules.
Under which molecular conditions do partial electrical charges develop between the covalently bonded atoms?

Fisrt, we have to define the molecular structure of the analytes, and in which molecular conditions of partial electrical charges develop themselves at the surface of a molecule.

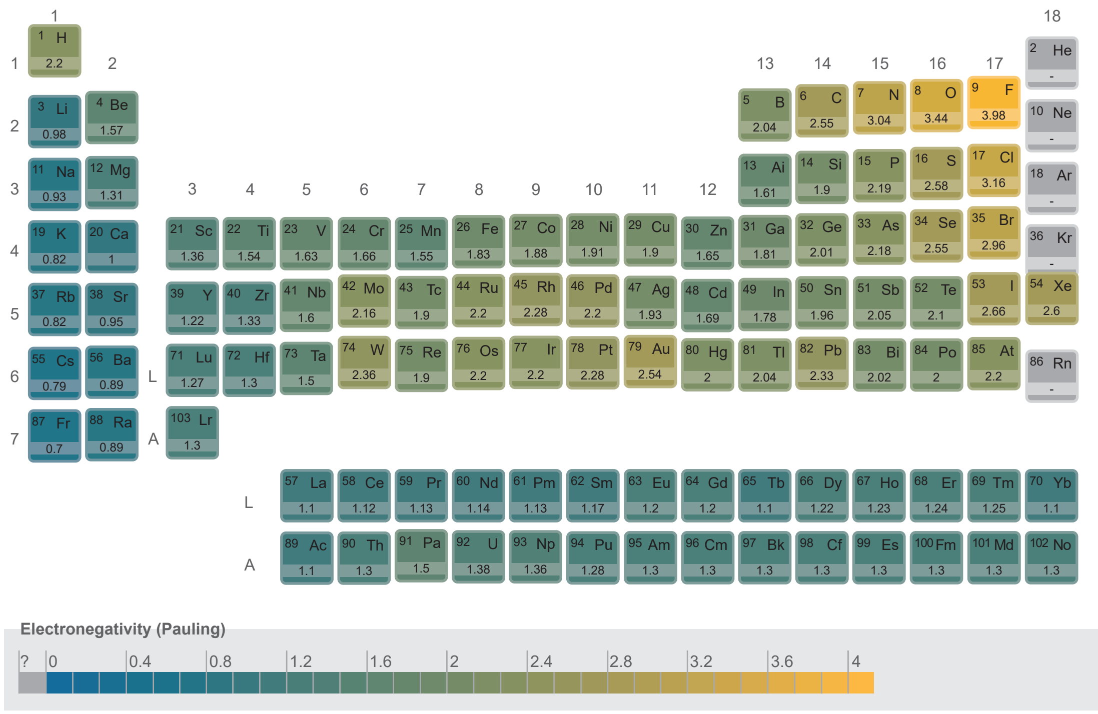
Organics molecules mainly contain: hydrocarbon skeleton at which functionalized groups may be added. This corresponds to two kinds of atoms
- Major atoms (C, H)
- Heteroatoms (O, N, S, P, Halogens)

When 2 atoms are covalently linked, their relative electronic attraction of bonding electrons leads to equal (symmetrical molecular bond) or unequal arrangement of partial charges in the molecule. The charge distribution is marked with the symbols δ^+ and δ^-. Thus, for each covalent bond a dipole is associated, to which correspond a dipolar moment. The vector sum of all dipolar moments leads to the molecular dipolar moment of a given structure.

Predict the nature of partial electric charges which respectively appear on two covalently bonded atoms refers to Pauling electronegativity scale.

The electronegativity (χ) is defined as the attraction power of an atom for an electron. Due to their specific structure, the atomic nucleus and electronic cloud of atoms generate their electronegativity.

In the periodic table of elements, the electronegativity, increases from left to right and from bottom to top.



There are four different ways for developing partial electric charges on a covalent bond. They lead to four different kinds of dipoles.

a) Instantaneous dipole δ_d

For linked atoms having the same electronegativity, binding electrons move quickly from one of the linked atom to the other and none unbalanced permanent charge occurs. However, instantaneously asymmetrical partial electric distribution appears which is immediately reversed.

The emergence of two reciprocal partial electric charges on each of the bonded atoms forms an instantaneous dipole which changes direction at every instant. In the case of organic molecules, these instantaneous partial charges develop on each C-C bond; more particularly in the case of alkanes, but also along the hydrocarbon chains of the functionalized molecules. Their intermolecular attraction potential is characterized by the partial dispersion solubility parameter δ_d which will be defined in the next chapter: solubility.

b) Permanent dipole δ_p

For two different bonded atoms (C-O; C=O; C-N; C-X...), due to their different electronegativity, a permanent unequal repartition of partial electrical charge is created. However, the global environment in which the heteroatom is inserted must, be taken into account: it must not be located in a system of symmetrical links with respect to a center (for example, CO_2 does not have a permanent dipole because it is a linear molecular structure whereas H_2O or Et-O-Et develop a permanent dipole because they are non-linear molecular structures). In the midst of the classes of molecules corresponding to this property are the ketones, the esters, the halogenated compounds, the tertiary amides, the nitriles...

Their potential intermolecular attraction is characterized by the partial dipolar parameters δ_p.

c) Peculiar case: notion of dipole causing hydrogen bonding

These interactions appear when in a structure OH, NH or SH functions are present. The very large difference in electronegativity between the heteroatom (O, N or S) and hydrogen leads to the creation of a permanent dipole. The power of attraction between the charge δ^+ on the hydrogen and the charge δ^- on the heteroatom is so strong that it leads to the creation of an intermolecular interaction between the H of a molecule with the heteroatom of the neighboring molecule to form the so-called hydrogen bond.Their intermolecular attraction potential is characterized by the partial hydrogen bond solubility parameter δ_H, which will be defined in the following chapter: solubilit. Among the classes of molecules corresponding to this property are the alcohols, phenols, carboxylic acids, amines I and II, amides I and II, thiol...

d) Induced dipole δ_d

When a polar molecule showing a permanent dipole is close to a neutral but polarizable molecule, its electric field is creating an induced dipole moment on this molecule leading to an unequal repartition of the electric charge.

This case occurs for molecules with multiple bonds C = C and C Ξ C or a carbon bonded to a large polarizable heteroatom, for example C-I in interaction with a polar molecule.

Amidst the molecule classes corresponding to this property, we can find aromatic acetylenic or ethylenic unfunctionalized hydrocarbons.

Their potential molecular attraction is integrated in the partial solubility parameter of dispersion δ_d.

Total resulting dipole δ_T

The total polarity of a molecule is the sum of all the contributions of the partial polarities described above. (vector sum of all the dipole moments of each bond of a molecule) Their intermolecular attraction potential is included in the total solubility parameter δ_T , which will be defined in the next section: solubility

It should be noted that, according to the small difference in electronegativity between hydrogen and carbon, each C-H bond has a very weak dipole moment. In space, thanks to the free rotation around the C-C bonds this effect is canceled out overall. But, this implies that instantly, the longer the chain is, the greater the influence of these instantaneous intermolecular attractions becomes strong. This makes possible to understand that the alkanes, non-polar solutes, can possess a permanent molecular attraction power, because they are liquid at atmospheric pressure from 5 carbons of linear chain up to 15 carbons and then solids above 16 carbons of chain.

For a good interpretation of physical properties of the molecular species, it is necessary to take into account 2 types of interactions:
- Van Der Waals interactions, rely on molecule polarity and polarizability.
- The interactions linked to the intermolecular and some intra molecular hydrogen binding.

Interaction	Mecanism	Molecules types	Involved compounds
Van der Waals	Debye + Keesom + London	Apolar molecules	Alkyl chains, aromatic rings
Dipolar Debye	Permanent dipole - instantaneous dipole	Polar molecules and any molecules	
Dipolar Keesom	Permanent dipole - permanent dipole	2 polar molecules	
Dipolar London	Instantaneous dipole - instantaneous dipole	2 any molecules	
Hydrogen binding		Proton acceptor - proton donor	Alcohols, amines, acids

Solubility

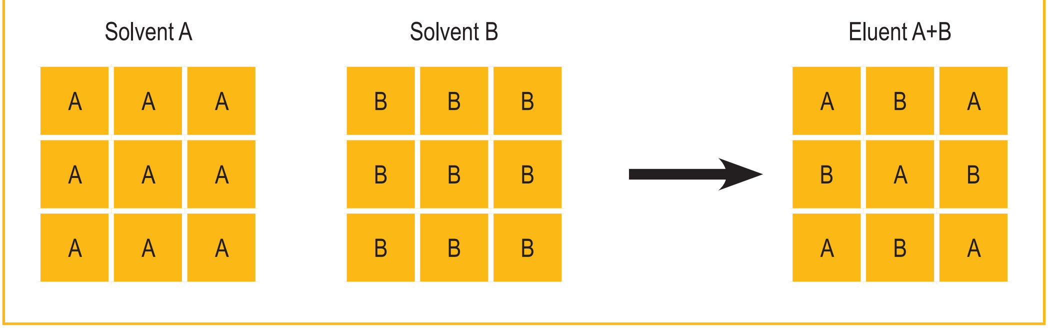
Purpose:
- understand how to choose the solvent that completely solubilizes a sample

In a simplified manner in the majority of situations, two non-electrolyte substances are totally miscible one in the other if:
- they have roughly the same molecular size and polarity.

That means that the ratio between the energies of molecular interactions and the molar volume of the two substances is similar.

From the theoretical point of view this has been modeled by Hildebrand, from which it emerges from the studies that:
- their total solubility parameters δ_T must be approximately identical (+/- 2)
- the nature of their main partial solubility parameter (partial dispersion solubility parameter δ_d or dipolar δ_p or hydrogen bonds δ_H must be identical.

Schematically



In contrast, two solutes with very different total solubility parameters ($\Delta\ \delta_T > 3$) separate into two distinct phases (demixing). However, in each phase, low concentrations of the other component of the biphasic system are found.

Universal solvents are solvents having total solubility parameters between 10 and 12 and each fractional polarity is close to 33%. They are therefore able to solubilize the majority of the products whatever their polarity. They belong to class E and to a lesser extent to class B as defined in the table and figure below.

The table below shows the values of the total solubility (δ_T) and partial (δ_d , δ_p ,δ_H) parameters of solvents and their fractional polarity parameters (f_d,f_p et f_H) with:
$f_d = (\delta_d / \delta_d + \delta_p + \delta_H) \times 100$
$f_p = (\delta_p / \delta_d + \delta_p + \delta_H) \times 100$
$f_H = (\delta_H / \delta_d + \delta_p + \delta_H) \times 100$

(Particular polymer case: PEG is miscible in water because the molecular interaction energy (binding hydrogen) is the same though the molecular volume is very different).

Example of total solubility and partial parameter values of some solvents

Solvent	δ_T *	δ_d *	δ_p *	δ_H *	f_d **	f_p **	f_H **	Class
MTBE	6.90	6.90	0.50	?				A
Heptane	7.40	7.40	0.00	0.00	100	0	0	A
Diethylether	7.62				67	23	10	A
Toluene	8.90	8.67	1.00	2.00	74	9	17	A
Thf	9.08	8.22	3.25	3.50	55	22	23	B
Ethyl acetate	9.10	7.44	4.60	2.50	51	32	17	D
Chloroform	9.21				67	10	23	A
Acetone	9.77	7.58	5.70	2.00	50	37	13	D
Dichloromethane	9.93	8.91	3.00	3.10	59	20	21	B
Octanol	10.30				53	6	41	C
Acetic acid	10.35				40	19	41	C
Butanol	11.30	7.81	2.50	7.80	43	14	43	C
Isopropanol	11.50				39	17	44	C
Acetonitrile	11.75				41	43	16	D
Ethanol	12.92	7.73	4.00	9.70	36	19	45	C
Methanol	14.30	7.42	5.50	11.20	31	23	46	C
Water	23.50	7.00	8.00	20.90	19	22	58	
Methylcellosolve	12.06	7.90	4.50	7.90	39	22	39	E
Dimethylformamide	12.14	8.52	6.70	5.50	41	32	27	E
Formic acid	12.15				33	20	47	C
Dimethyl sulfoxyde	12.93				37	33	30	E

*Hansen solubility parameters from J.Roire “Les solvants” EREC (Issy les Moulinwaterx) 1989
** Fractional polarity parameters from J.Roire “Les solvants” EREC (Issy les Moulinwaterx) 1989

Depending on their fractional polarity, the solvents are distributed in 6 different areas of the planar space. Thus they can be grouped into 5 distinct classes plus water that is alone in an area of this space:
A class corresponds to solvents developing mainly nonspecific interactions (f_d majority > 80%).

B class corresponds to intermediate solvents between the three preceding classes (f_d majority with f_H and f_p close to 20%).

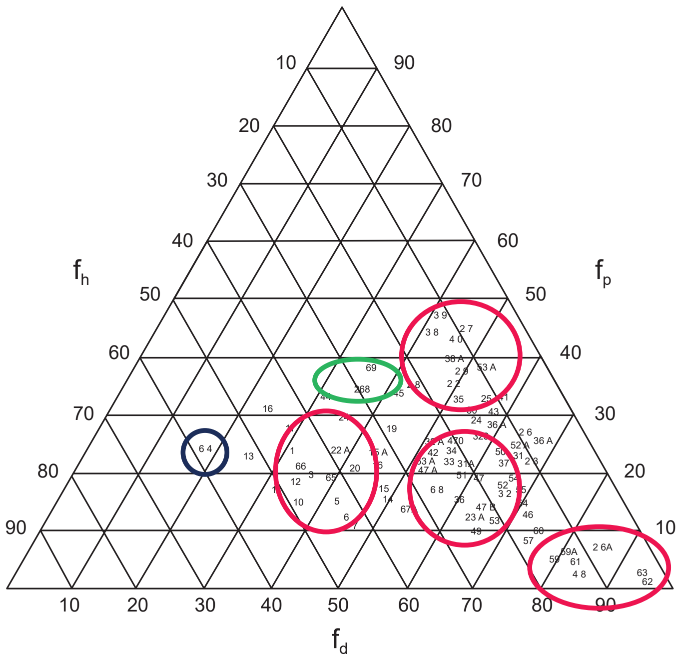
C class corresponds to solvents developing in addition to the dispersion interactions (f_d ~ 40%) some interactions by H bond (f_H > 40%).

D class corresponds to solvents developing in addition to dispersion interactions (f_d ~ 50%) mainly dipolar interactions (f_d > 30%).

E class corresponds to solvents developing in the same way (between 30% and 40%) the three types of interactions.

Finally the water which is apart.

This is shown in the following figure where the zones of solvents of classes A, B, C and D are materialized by red circles or ovals; those of class E by a green oval; finally the water is marked by a small blue circle.



Three-dimensional distribution of some solvents according to their fractional polarity parameter
(from J.Roire "Les solvents" EREC (Issy les Moulinwaterx) 1989)

The total solubility parameter is determined either experimentally or by calculation from the partial solubility parameters. These are obtained from the measurement of the refractive index, the permitivity, the density and the molecular mass of each solvent.

Particular case of the polymers: although their molar volume is very different, PEG is totally miscible in water because their fractional hydrogen binding polarities $(\delta_H/\delta_T)^2$ (or their fractional hydrogen bonding polarity parameter f_H) are close.

Liquid-Liquid Extraction of non Electrolytes

Purpose:

- finding the solvent couple allowing the extraction of a non-electrolyte solute in one of the two solvents of the pair with the minimum of steps

Generally one of the both solvents is water. Since the water is polar, the other solvent will necessarily be a non-polar solvent (δ_T very different) in order to obtain two distinct layers. Most often the non-polar solvent will be diethyl ether, chloroform, dichloromethane, ethyl acetate, a hydrocarbon... This choice is made with the knowledge of the total solubility parameters. When one considers, for example, a plant sample in its solid form (leaf, stem, root, bark, fruit, etc.) from which one wants to extract the "active" molecules, it is the water contained in the organism to extract which constitutes one of the two liquid phases of the extraction system. Thus, it is the same theoretical case as above.
Consider now a pure solute. If the solute is polar it will solubilize rather in water and its concentration in the organic phase will be very small. If the solute is apolar it will solubilize preferentially in the organic phase and its concentration in water will be very low. On the other hand, if it is moderately polar, it will partition between the water and the organic phase. The concentration in each of the two phases will depend on its difference in polarity with water and that of the organic solvent.

This has been theoretically described and this equilibrium is characterized by the partition coefficient K_i (ratio of the concentrations of solute i in the two phases). It is expressed mathematically from the three total solubility parameters of solute i, water and the organic solvent chosen, by the following formula

$\text{Ln } K_i = 1/RT \times (V_i [(\delta_{Ti} - \delta_{Twater})^2 - (\delta_{Ti} - \delta_{Torga})^2]$ where V_i ($=M_i/r_i$) is the molecular volume of the analyte δ_H must be identical.

Thanks to this formula it is easy to understand that a solute of intermediate polarity between that of the water and that of the chosen organic solvent will lead to the fact that $(\delta_{Ti} - \delta_{Twater}) = (\delta_{Ti} - \delta_{Torga})$ so $\ln K_i = 0$ and $K_i = 1$ therefore that the concentrations of the solute in the two phases are identical. By making two successive extractions with the same volume of organic solvent, 75% of the solute will be extracted, while making 3 extractions 87.5% will be extracted and by making 4 extractions of 93.75% etc.
If now the polarity of the solute leads to a partition of 90% in the organic phase and 10% in the aqueous phase after 2 extractions, 99% of the solute "i" will be extracted and after three extractions the result will reach 99.9% (the aqueous solution will be "exhausted").

Finally, in the case of the extraction of plant matrix: since there is not only one compound in this type of matrix and the compounds polarities and therefore their total solubility parameters are different, each and every be extracted according to its difference $(\delta_{Ti} - \delta_{Twater}) = (\delta_{Ti} - \delta_{Torga})$. Their concentration in each organic solvent is therefore not the same. This explains why, when extracting a plant matrix with hexane, chloroform or ethyl acetate, the same solutes extracted in the three different organic fractions are qualitatively found; only the relative concentrations are changed.
In such a system one can not make selective extraction of a single class of solutes.In this case, each extract must be reprocessed by another separation technique.

Solvents polarity scale in chromatography

Purpose:
- determining the chromatographic conditions for the purification of a sample.

In the chromatographic process, the solvent interacts with the stationary phase.

It enters into competition of interactions with the solute. In order for the solute to be retained, it must develop stronger molecular interactions with the stationary phase than those developing between the mobile phase and the stationary phase. In order for it to be eluted, the mobile phase must develop molecular interactions slightly less strong than those which the solute develops with the stationary phase.

The chromatographic system is thus composed of a stationary phase of opposite polarity to that of the mobile phase. If the stationary phase is polar ($\sum f_p + f_H$ majority) the mobile phase will be rather apolar.
A very apolar solvent will be named "weak".
A very polar solvent will be named "strong" (liquid chromatography with normal phase polarity).
If the stationary phase is apolar (f_d > 80%) the mobile phase will be rather polar. In this case the polar solvents will be named "weak" and the apolar solvent will be named "strong" (liquid chromatography with reversed phase polarity).

Theoretical studies have determined the total solubility parameter of the stationary phases of liquid chromatography, which allows us to understand their mode of operation. We report them in the following chart:

Example of total solubility and partial parameter values of some stationary phases

Stationary phase	d_T	f_d	f_p	f_H
Alumina	~16.0	38	31.0	36.0
Silica	~16.0			
Pyrocarbon	~14.0	100	0.0	0.0
Alkyl bonded silica	~7.0 à 8.0	100	0.0	0.0
Perfluoro-alkyl bonded silica	~6.0	100	0.0	0.0
Cn* bonded silica	~10.5	45	40.5	14.5
Diol* bonded silica	~20.0	26	22.0	52.0
Phenyl* bonded silica	~9.0	80	5.0	15.0

Solubility prameters from P.J. Schoenmakers“Optimization of chromatographic selectivity” J. of chromatography Library vol 35 Elsevier Amsterdam 1986. *Solubility parameters evaluated on the of the silane δ_T

The silica data are partial. It should be noted that they must be close to those of alumina. These two supports are polar. However, alumina, a basic support, is rather a hydrogen-binding acceptor whereas silica, an acidic support, is rather a donor of hydrogen binding. This leads to notable differences in selectivity between these two supports when analyzing mixtures of acidic or basic polar solutes.

In fact, the silica, the alumina and the bonded silicas diol are polar stationary phases. The grafted silicas alkyl, perfluoroalkyl, phenyl and to a lesser extent the cyano grafted silicas are non-polar stationary phases.

In order for the chromatographic phenomenon to be established, it is necessary for the solute to partition neighboringly between the stationary phase and the mobile phase. It must therefore have a polarity place between that of the stationary phase and that of the mobile phase.

According to the same principle as in liquid-liquid extraction described above §A3.3 the solute "i" is divided between the stationary phase and the mobile phase as a function of its polarity.

On the other hand, if the solute develops very strong interactions with the stationary phase and the mobile phase develops much less interactions with the stationary phase, the solute is blocked on the stationary phase and the mobile phase does not elute it. By changing the polarity of the mobile phase by step, the solutes are selectively eluted by class according to their polarity.

If the mobile phase develops very strong interactions with the stationary phase, the solutes are not retained and not separated regardless of their polarity.

These last two cases correspond to the liquid-solid extraction working conditions (SPE) and relate to the step of fixing the solutes and then that of their elution.

Normal Phase Liquid Chromatography (NPLC)

In this chromatographic process, the solvent and the solute interact with a polar stationary phase (SIOH, AlOH, MgOH, ZrOH, TiOH).

- The more polar the solute is, the more it will be retained and the more it will be necessary to use a polar mobile phase to elute it.
- If the solute is weakly polar, the mobile phase must be of low polarity.

A relative experimental scale of polarity of the solvents with the adsorption supports was developed by Snyder (in this scale the order of the pure solvents is the same whatever the adsorbent Si-OH, Al-OH, Mg-OH, Zr-OH, Ti-OH). This scale classifies the solvents by increasing polarity as well as that of the total solubility parameters. The sequence is substantially identical, although a few inversions occur since the solubility parameters define the polarity of a pure body and the scale of eluting force that of the same body in interaction with a polar adsorbent.

Thus, by definition, to the least polar solvent has been assigned a zero eluting force ε_0. This does not mean that this solvent is not eluting in particular for nonpolar solutes, but that no solvent having a lower eluent power is known. In the same way in this scale the strongest solvent is the most polar solvent: water. This eluent develops very intense interactions (so strong that it is not possible to quantify the eluting force of the water.) By taking water as a mobile phase, no electrolyte solute is retained on these hydroxylated supports, even goes so far as to create irreversible interactions which deactivate these supports for any subsequent chromatography unless they are subjected to drastic reactivation treatments.

Due to their interaction with the stationary phase the relative positioning of the solvents in this scale is slightly different from that described by the scale of the total solubility parameters. The Snyder scale is given in the following chart:

Eluting strength values of solvents for NonPolarLC

Solvent	δ_T			ε_0 20°C		
		ε_0 (Al2O3)	ε_0 (SiO2)	ε_0 (florisil)	ε_0 (magnesia)	ε_0 (diol)
Perfluoroalkanes	5.6 - 5.8	-0.25	-0.19	-0.13	-0.15	-0.06
N-Pentane	6.99	0.00	0.00	0.00	0.00	0.00
N-Hexane	7.28	0.00	0.00	0.00	0.00	0.00
Isooctane	6.90	0.01	0.01	0.01	0.01	0.00
Petroleum ether	7.85	0.01	0.01	0.01	0.01	0.00
N-Decane	7.80	0.04	0.03	0.02	0.02	0.01
Cyclohexane	8.21	0.04	0.03	0.02	0.02	0.01
Cyclopentane	8.10	0.05	0.04	0.03	0.03	0.01
Diisobutylene		0.06	0.05	0.03	0.03	0.01
1-Pentene		0.08	0.06	0.04	0.05	0.02
1,1,2-Trichlorotrifluoroethane		0.14	0.11	0.07	0.08	0.03
Carbon disulfide	9.97	0.15	0.12	0.08	0.09	0.03
Carbon tetrachloride	8.80	0.18	0.14	0.09	0.10	0.04
1,1,1-Trichloroethane	7.72	0.19	0.15	0.10	0.11	0.04
Tert-Butyl methyl ether	6.90	0.20	0.15	0.10	0.12	0.05
1-Chloropentane		0.26	0.20	0.14	0.15	0.06
1-Chlorobutane		0.26	0.20	0.14	0.15	0.06
Xylene	8.90	0.26	0.20	0.14	0.15	0.06
Diisopropyl ether	7.00	0.28	0.22	0.15	0.16	0.06

Solvent	δ_T			ε_0 20°C		
		ε_0 (Al2O3)	ε_0 (SiO2)	ε_0 (florisil)	ε_0 (magnesia)	ε_0 (diol)
2-Chloropropane		0.29	0.22	0.15	0.17	0.07
Toluene	8.90	0.29	0.22	0.15	0.17	0.07
1-Chloropropane		0.30	0.23	0.16	0.17	0.07
Chlorobenzene		0.30	0.23	0.16	0.17	0.07
Benzene	9.14	0.32	0.25	0.17	0.19	0.07
1-Bromoethane		0.37	0.28	0.19	0.21	0.09
Diethyl ether	7.62	0.38	0.29	0.20	0.22	0.09
Diethyl sulfide		0.38	0.29	0.20	0.22	0.09
Chloroform	9.21	0.40	0.31	0.21	0.23	0.09
Dichloromethane	9.93	0.42	0.32	0.22	0.24	0.10
Isobutyl metyl ketone	9.04	0.43	0.33	0.22	0.25	0.10
Tetrahydrofuran	9.08	0.45	0.35	0.23	0.26	0.10
1,2-Dichloroethane	9.43	0.49	0.38	0.25	0.28	0.11
Ethyl methyl cetone	9.63	0.51	0.39	0.27	0.30	0.12
1-Nitropropane		0.53	0.41	0.28	0.31	0.12
Acetone	9.77	0.56	0.43	0.29	0.32	0.13
1,4-Dioxane	8.90	0.56	0.43	0.29	0.32	0.13
Ethyle acetate	9.10	0.58	0.45	0.30	0.34	0.13
Methyle acetate		0.60	0.46	0.31	0.35	0.14
1-Pentanol		0.61	0.47	0.32	0.35	0.14
Dimethyl sulfoxyde	11.78	0.62	0.48	0.32	0.36	0.14
Aniline		0.62	0.48	0.32	0.36	0.14
Diethylamine		0.63	0.49	0.33	0.37	0.15
Nitromethane	12.71	0.64	0.49	0.33	0.37	0.15
Acetonitrile	11.75	0.65	0.50	0.34	0.38	0.15
Pyridine	10.61	0.71	0.55	0.37	0.41	0.16
2-Butoxyethanol		0.74	0.57	0.38	0.43	0.17
Isopropanol	11.50	0.82	0.63	0.43	0.48	0.19
1-Propanol	11.88	0.82	0.63	0.43	0.48	0.19
Ethanol	12.92	0.88	0.68	0.46	0.51	0.20
Methanol	14.30	0.95	0.73	0.49	0.55	0.22
Ethylene glycol	17.06	1.11	0.85	0.58	0.64	0.26
Acetic acid	10.35	high	high	high	high	high
Water	23.46	very high	very high	very high	very high	very high

The determination of the best polarity of a mobile phase for a separation problem on these supports is determined experimentally by choosing step by step the solvents of increasing eluting force and by evaluating each time the retention of all the compounds of a mixture and their separation. This can be done by TLC, in which case it will be necessary to find a mobile phase placing all the solutes with RF ranging between 0.09 and 0.3. This can also be done in HPLC by finding the mobile phase composition placing all the solutes in the range of retention factors between 2 and 10 (15, strictly speaking). If no mobile phase composition allows this, it will be necessary to work in elution gradient or to find another chromatographic support.

The differences in polarity (eluting force) between two successive pure solvents are sometimes sufficiently important that in switching from one to the other the elution becomes too fast.Snyder has therefore proposed a progressive polarity scale of various binary mixtures of solvents which can be used to control this drawback. In order to choose the mobile phase of good composition, given that the eluting force variation of the solvent binary mixtures is not linear, it is necessary to use the Snyder nomogram which proposes the successive use of the binary mixtures:

CH_2Cl_2-hexane	(3.5% to 100%)	$(0.05 < \varepsilon_0 < 0.30)$
MTBE-hexane	(0.2% to 84%)	$(0.10 < \varepsilon_0 < 0.45)$
Ethyl acetate-hexane	(0.3% to 75%)	$(0.10 < \varepsilon_0 < 0.45)$
MTBE -CH_2Cl_2	(30% to 88%)	$(0.35 < \varepsilon_0 < 0.45)$
MeCN-CH_2Cl_2	(12% to 88%)	$(0.10 < \varepsilon_0 < 0.5)$
MeOH-CH_2Cl_2	(3.5% to 95%)	$(0.40 < \varepsilon_0 < 0.9)$

On the other hand, it frequently happens that, although all the solutes are eluted between $0.09 < R_f < 0.3$ so $2 < k < 10$ two or more solutes are poorly separated.

When two solutes are poorly separated in a mobile phase of a given composition (ε_0 fixed), we must choose, for the new mixture, a solvent having a total solubility parameter (δ_T) identical or very close to the most polar solvent of the mixture used, but having a different dominant solubility partial parameter (these binary mixtures therefore consist of a weak solvent belonging to class A mixed with a strong solvent chosen either in class B or C or D).

This leads to subtly modify the solute-solvent molecular interactions in order to increase the separation while keeping the retention close to the same value. This notion led Snyder to define eluotropic series composed of solvents of different polarity (Snyder's eluotropic series) (see, for example, LR Snyder, Chapter 6, JJ Kirkland, "Modern Pratice of Liquid Chromatography," J Wiley and Sons, New York 1971).

Basis on Rohrschneider's work on the polarity of gas chromatography stationary phases, Snyder has developed an empirical model for the expression of the solvent polarity by a value called polarity parameter P‘ which unfortunately does not use the concept of solubility parameter. The polarity P’ index isn’t sufficient enough to judge the total interactions in a liquid state.

This model is built on the determination of the chromatographic behavior of three control solutes of very different polarities:
- ethanol (as representative of a molecule which predominantly gives hydrogen binding interactions when considering the binding donor power H)
- para dioxane as representative of a molecule which predominantly gives rise to hydrogen binding interactions by considering the binding acceptor strength H)
- nitromethane (as representative of a molecule that predominantly gives dipolar interactions).

Having determined P' as the sum of these three properties exactly as was done by Hildebrand define for the fractional polarity parameter of the solvents, Snyder then makes the ratio of a property on the sum of the three to define the acceptor polarity parameters of proton (Xe), that of proton donor (Xd) and that of dipole-dipole interaction (Xn) of each of the pure solvents tested.The mixtures of solvents showing similar retention but giving different selectivities are composed of a weak solvent of group I to which a group II or group VI or group VII solvent is mixed (because the solvents of these 3 groups have different fractional polarities parameters) and remembering that chloroform gives particular selectivities but is often eliminated nowadays for environmental reasons.

Example of Snyder total polarity and fractional parameters values of some solvents

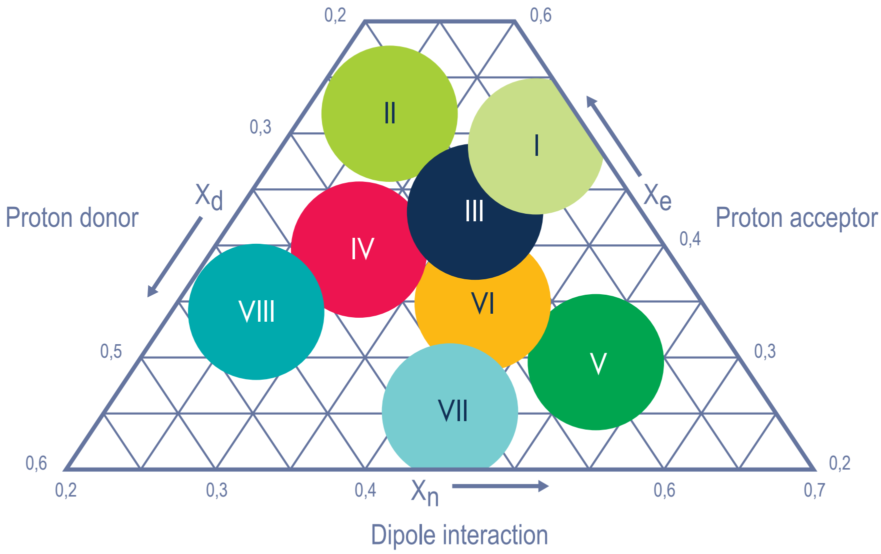
Solvent	P' *	X_e **	X_d **	X_n **	Group
Heptane	-0.09				non classifiable
Mtbe	~2.30	0.41	0.19	0.40	I
Diethylether	2.80	0.53	0.14	0.33	I
Octanol	3.23	0.58	0.17	0.25	II
Isopropanol	3.92	0.57	0.17	0.26	II
Ethyl acetate	4.24	0.34	0.23	0.43	VI
Thf	4.28	0.38	0.20	0.42	III
Dichloromethane	4.29	0.27	0.33	0.40	VII
Chloroform	4.31	0.31	0.35	0.34	isolated
Ethanol	4.40	0.52	0.19	0.29	II
Acetone	5.10	0.35	0.23	0.42	VI
Methanol	5.10	0.48	0.22	0.31	II
Acetonitrile	5.64	0.31	0.27	0.42	VI
Acetic acid	6.13	0.41	0.30	0.30	IV
Water	10.20	0.37	0.37	0.25	VIII
Toluene	68.00	0.25	0.28	0.47	VII
Methylcellosolve	5.71	0.41	0.22	0.36	III
Dimethylformamide	6.31	0.40	0.21	0.39	III
Formic acid					IV
Dimethyl sulfoxyde	7.29	0.39	0.22	0.39	III

* Snyder polarity parameters from V.R. Meyer "Practical High Performance Liquid Chromatography'" J,WILEY and Sons (Chichester) 1988
** Snyder fractional polarity parameters from V.R. Meyer "Practical High Performance Liquid Chromatography'" J,WILEY and Sons (Chichester) 1988

Each of the three values is then plotted on a ternary diagram and the solvents are distributed in this plane space in 10 different zones where the solvents are grouped by 8 groups of partial polarity.

Each group gathers solvents according to their own relative specificities described by three fractional polarity parameters:
- X_e for their hydrogen bond acceptor power
- X_d for hydrogen bonding
- X_n for the dipolar interactions

G I: aliphatic ethers (MTBE, diethyl ether, etc.)
G II: aliphatic alcohols (Methanol, isopropanol, etc.)
G III: Pyridine derivates, methyl cellosolve, THF, N,N-Dimethylformamide...
G IV: acetic acid, glycols, (propylen glycol...)
G V: dichloromethane, 1-2 dichloroethane
G VI: (a) aliphatic ketones (Acetone, MEK), esters (ethyl acetate), dioxane, nitriles (acetonitrile)
G VII: aromatic hydrocarbons, aromatic compounds, nitromethane
G VIII: water, tetrafluoropropanolAnd: isolated chloroform (surrounded on the figure by a green circle) non-classifiable saturated hydrocarbons



The space occupation is different from that of the partial parameters of solubility triangle insofar as the solvents are not classified by the same properties.

Here, the interaction power due to the instantaneous dipoles is not taken into account (thus characterizing the very important non-specific interactions due to the hydrocarbon skeleton of the molecules). On the other hand, the interactions due to the hydrogen bind are divided into acceptor (X_e) and donor (X_d) of Hydrogen links, which is judged globally in the δ_H parameter of Hildebrand.

Reversed phase liquid chromatography (RPLC)

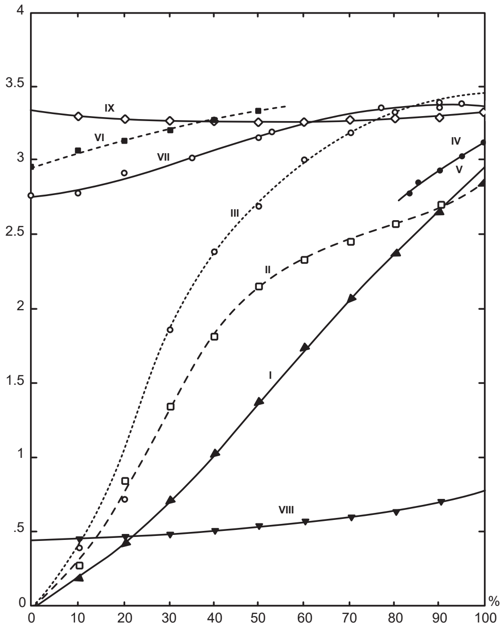
In this chromatographic process, the solvent and the solute interact with a non-polar stationary phase (alkyl bonded silicas, hydrocarbon coated supports, porous graphitized carbon, aromatic polymers).

- The more the solute is apolar the more it will be retained and the more it will be necessary to use an apolar mobile phase to elute it.

- If the solute is "weakly apolar" the mobile phase must be also weakly apolar. The more polar the solute is, the more polar must be the eluent.

In this chromatographic mode, water, the most polar solvent, is the weak solvent (the most retentive). The strong solvents (the most eluting) used must be completely miscible with water and show a different dominant partial polarity (the respective partial solubility parameters or fractional dominant Snyder polarity parameters are different). This leads to the selection of three solvents: Methanol, acetonitrile and THF which belong to classes (D, C and B) or different groups (II, VI and III) in each of the two three-dimensional polarity spaces.

By analogy with the phenomena of molecular interactions developing in NPLC, Snyder proposed a progressive polarity scale of the various Methanol-water binary mixtures based on the measurement of methylene selectivity (selectivity between two homologous solutes whose length difference of alkyl chain is one carbon). By definition he gave the eluent strength value ε_0=0 to the methylene selectivity in pure water cause none other pure solvent has lower eluting power than water in this chromatographic mode. In this scale pure Methanol has an eluting force ε_0=2.9.This is shown in the Colin-Guiochon eluent force diagram below:



In this polarity scale, the eluting force variation of the water-Methanol binary mixtures as a function of the % of Methanol (φ) is approximately linear. (this is not the case for mixtures of water-acetonitrile and water-THF for which this variation has a convex shape).

Solvent eluotroppic strength of various mobile phase systems (A-B): the composition is given in volume percent of solvent B.

I	A=H_2O	B=MeOH	B=MeOH	(△)
II	A=H_2O	A=MeCN	A=MeCN	(□)
III	A=H_2O	A=THF	A=THF	(○)
IV	A=H_2O	A=EtoH	A=EtoH	(▲)
V	A=MeOH	A=A_c	A=A_c	(●)
VI	A=MeOH	A=THF	A=THF	(■)
VII	A=MeOH	A=Et.Ac	A=Et.Ac	(○)
VIII	A=(20MeOH + 80H_2O)	A=(20THF + 80H_2O)	A=(20THF + 80H_2O)	(▽)
IX	A=(80THF + 20H_2O)	A=(50THF + 50MeOH)	A=(50THF + 50MeOH)	(◇)

The determination of the best composition of a mobile phase for a separation problem on these RP sorbents is established experimentally by choosing step by step the solvents of decreasing eluting force (increase of water % by 10% in 10%) and by evaluating each time the retention of all the compounds of a mixture and their separation. This is done in HPLC by finding the mobile phase composition placing all the solutes in the range of retention factors included between 2 and 10 (15, strictly speaking). If no mobile phase composition allows this it will be necessary to work in elution gradient or to find another chromatographic support.

The weak and medium polar solutes will be eluted with mobile phases of intermediate composition. The polar solutes (δT>13) will be eluted with high ratio of weak solvent mobile phases (high water ratio). The non-polar solutes (δT <8) will be eluted with very eluting mobile phases composed of high ratio of organic solvents (NonAqueousRP mode).

When two solutes are poorly separated with a Methanol-water mobile phase of given composition (fixed ε0), it is necessary to replace the Methanol with acetonitrile or THF, while keeping the solutes retention near the same values. The change of organic modifier most often leads to the selectivity modification of poorly separated peak pairs in a given binary mixture.

The simplest equivalence rules (iso-eluence) are as follows:
By using solubility parameters, we find:
φMeCN = 0.78 φMeOH
φTHF = 0.62 φMeOH
φTHF = 0.80 φMeCN

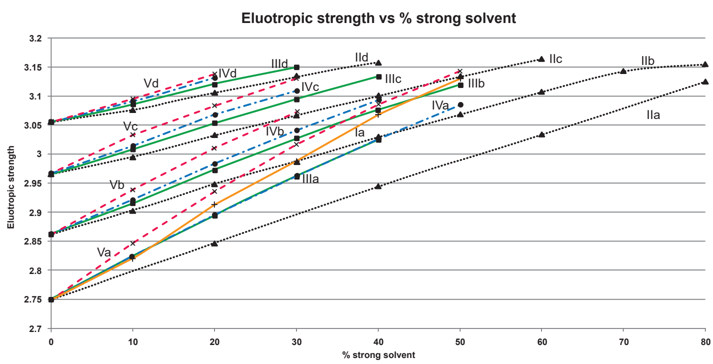
By using the Snyder polarity parameters, we find:
φMeCN = 0.82 φMeOH
φTHF = 0.58 φMeOH

These two very similar results therefore lead substantially to the same equivalences and one can use either one or the other or the average of the two estimates without this being detrimental from the point of view of the method and of the final result.

Non Aqueous RP mode
For non-polar solutes (δ_T<8 to 9) (triglycerides, ceramides, hydrocarbons, carotenoids, anthraquinoides, PAH...) which are insoluble in water or water-organic mixtures, binary mixtures are made up of:
- as weak solvents: acetonitrile or much more rarely Methanol
- as strong solvents: the solvents most often having an fd>50%, then chloroform, dichloromethane, Acetone, ethyl acetate, THF, diethyl ether, MTBE or a saturated hydrocarbon, making sure they are completely miscible with the weak solvent.

Considering their respective values of f_p and f_H or their belonging to different classes in the Hildebrand polarity representation, these strong solvents will give different selectivities for poorly separated pairs of solutes in a given binary composition.

Their similar eluting strength was recently reported by the following Heron-Tchapla diagram for the "green" binary blends Acetonitrile-CH2Cl2, Acetonitrile-Acetone, Acetonitrile-isoPropanol, Acetonitrile-Ethyl Acetate and Acetonitrile-Butanol at 4 different temperatures.



1. Solvent eluotropic strength of various mobile phase systems (MeCN/Strong solvent). The composition is given in volume percent of strong solvent.
(I) MeCN/CH_2Cl_2 (in orange); (II) MeCN/AcMe (in black); (III) MeCN/iPrOH (in green); (IV) MeCN/AcOEt (in blue); (V) MeCN/BuOH (in red).
(a) T = 25°C; (b) T = 43°C; (c) T = 63°C; (d) T = 85°C

Miscibility chart with polarity and solubility parameters

solvant	classe d	famille polarité	e0 20°C					Perfluoroalkanes	n-Pentane	n-Hexane	Isooctane	Petroleum ether	n-Decane	Cyclohexane	Cyclopentane	Diisobutylene	1-Pentene	1,1,2-Trichlorotrifluoroethane	Carbon disulfide	Carbon tetrachloride
			e0 (Al2O3)	e0 (SiO2)	e0 (florisil)	e0 (magnesie)	e0 (diol)	A	A	A	A	A	A	A	A	A	A	A	A	A
Perfluoroalkanes	A	NC	-0.25	-0.19	-0.13	-0.15	-0.06													
n-Pentane	A	NC	0	0	0	0	0													
n-Hexane	A	NC	0	0	0	0	0													
Isooctane	A	NC	0.01	0.01	0.01	0.01	0													
Petroleum ether	A	NC	0.01	0.01	0.01	0.01	0													
n-Decane	A	NC	0.04	0.03	0.02	0.02	0.01													
Cyclohexane	A	NC	0.04	0.03	0.02	0.02	0.01													
Cyclopentane	A	NC	0.05	0.04	0.03	0.03	0.01													
Diisobutylene	A		0.06	0.05	0.03	0.03	0.01													
1-Pentene	A		0.08	0.06	0.04	0.05	0.02													
1,1,2-Trichlorotrifluoroethane	A		0.14	0.11	0.07	0.08	0.03													
Carbon disulfide	A	NC	0.15	0.12	0.08	0.09	0.03													
Carbon tetrachloride	A	VII	0.18	0.14	0.09	0.1	0.04													
1,1,1-Trichloroethane	A		0.19	0.15	0.1	0.11	0.04													
tert-Butyl methyl ether	A	I	0.2	0.15	0.1	0.12	0.05													
1-Chloropentane	A		0.26	0.2	0.14	0.15	0.06													
1-Chlorobutane	A		0.26	0.2	0.14	0.15	0.06													
Xylene	A	VII	0.26	0.2	0.14	0.15	0.06													
diIsopropyl ether	A	I	0.28	0.22	0.15	0.16	0.06													
2-Chloropropane	B		0.29	0.22	0.15	0.17	0.07													
Toluene	A	VII	0.29	0.22	0.15	0.17	0.07													
1-Chloropropane	B		0.3	0.23	0.16	0.17	0.07													
Chlorobenzene	A	VII	0.3	0.23	0.16	0.17	0.07													
Benzene	A	VII	0.32	0.25	0.17	0.19	0.07													
1-Bromoethane	A		0.37	0.28	0.19	0.21	0.09													
Diethyl ether	A	I	0.38	0.29	0.2	0.22	0.09													
Diethyl sulfide	A	NC	0.38	0.29	0.2	0.22	0.09													
Chloroform	A	peculiar	0.4	0.31	0.21	0.23	0.09													
diChloroMethane	A	VII	0.42	0.32	0.22	0.24	0.1													
Isobutyl methyl ketone	B	VI	0.43	0.33	0.22	0.25	0.1													
Tetrahydrofuran	B	III	0.45	0.35	0.23	0.26	0.1													
1,2-Dichloroethane	B	V	0.49	0.38	0.25	0.28	0.11													
Ethyl methyl ketone	D	VI	0.51	0.39	0.27	0.3	0.12													
1-Nitropropane	D	VII	0.53	0.41	0.28	0.31	0.12													
Acetone	D	VI	0.56	0.43	0.29	0.32	0.13													
1,4-Dioxane	B	VI	0.56	0.43	0.29	0.32	0.13													
Acétate d'Ethyle	D	VI	0.58	0.45	0.3	0.34	0.13													
Methyl acetate	D		0.6	0.46	0.31	0.35	0.14													
1-Pentanol	C	II	0.61	0.47	0.32	0.35	0.14													
Dimethyl sulfoxyde	E	III	0.62	0.48	0.32	0.36	0.14													
Aniline	B	VI	0.62	0.48	0.32	0.36	0.14													
Diethylamine	B		0.63	0.49	0.33	0.37	0.15													
Nitromethane	D	VI	0.64	0.49	0.33	0.37	0.15													
Acetonitrile	D	VI	0.65	0.5	0.34	0.38	0.15													
Pyridine	B	III	0.71	0.55	0.37	0.41	0.16													
2-Butoxyethanol	C		0.74	0.57	0.38	0.43	0.17													
isopropanol	C	II	0.82	0.63	0.43	0.48	0.19													
1-Propanol	C	II	0.82	0.63	0.43	0.48	0.19													
Ethanol	C	II	0.88	0.68	0.46	0.51	0.2													
Methanol	C	II	0.95	0.73	0.49	0.55	0.22													
Ethylene glycol	C	II	1.11	0.85	0.58	0.64	0.26													
Acetic acid	E	IV	high	high	high	high	high													
Water	peculiar	VIII	very high	very high	very high	very high	very high													
N,N-Dimethylformamide	E	III																		

Perfluoroalkanes n-Pentane n-Hexane Isooctane Petroleum ether n-Decane Cyclohexane Cyclopentane Diisobutylene 1-Pentene 1,1,2-Trichlorotrifluoroethane Carbon disulfide Carbon tetrachloride

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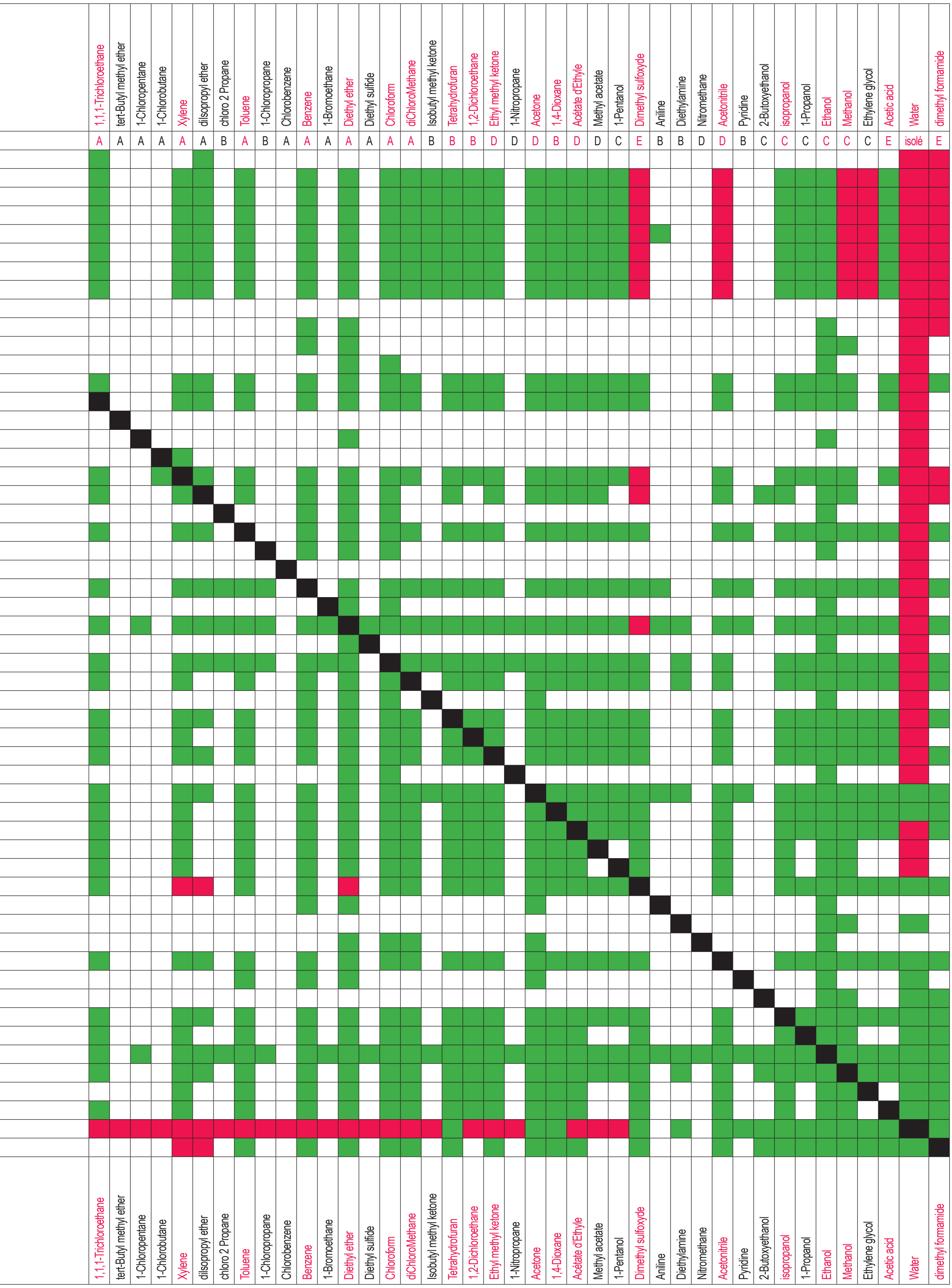
Theoretical Principles - Polarity, Solubility & Solvent Strength - Reversed Phase Liquid Chromatography (RPLC)



Detectors distinguish compounds from the mobile phase according to their physical properties. The collected fractions are cutted based on the dectector signal. Collect can be done relatively to a threshold and/or a slope value. Detection sensitivity is different from a detector to another, and is linked to compounds concentration or not. To maximize the dectection potential it is recommanded to couple different devices ie. UV+ELSD, UV+ELSD+MS,...

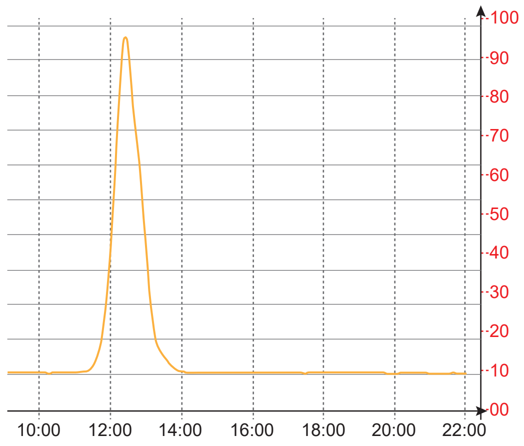
UV Visible Detector - Diode Array (DAD) Technology

When subjected to a light radiation, certain functional groups may be the seat of electronic excitation corresponding to an energy absorption at a specific wavelength. The signal collected correspond to a light absorption.

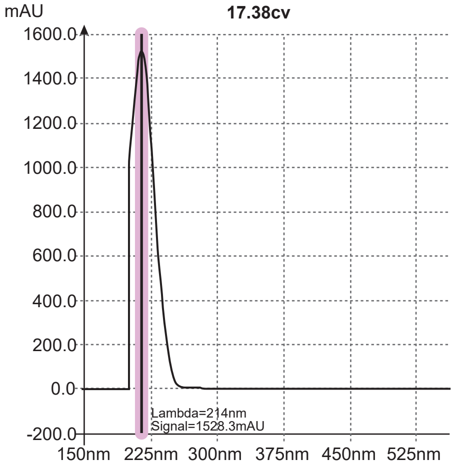
The UV detectors are not universal detectors. To be detected a compounds must have a chromophore in its molecular structure (i.e substances with aromatic ring, with at least 2 conjugated double bonds, with a double bond adjacent to an atom with ion electron pairs, with carbonyl groups, or containing bromine, iodine, or sulfur).

Different UV detectors are commonly used:

- Detector with a fixed wavelength, managed by a specific lamp. In this case, compounds response must be verified.
- Detector with variable wavelength allowing to choose between several wavelengths. This leads to a maximum of sensitivity.
- Diode Array Detector (DAD), uses hundreds of diodes to scan a range of wavelengths and gives a 3D representation (time, absorbance, wavelength) of the signal. This detector allows the acquisition of the UV spectrum that give indication of the purity of each detected compound.



Absorbance in mAU in function of the time or column volume.



UV spectrum showing the wavelength with the maximum absorbance at a given time.

- **All wavelength detection:**
  When the maximum absorbance of molecule is unknown, the scan function of the detector is the right solution. This scan signal corresponds to an average absorbance based on wavelengths within the range selected.

Solvent	UV (nm) Cutoff @1AU
Acetone	330
Acetonitrile	190
Dimethylformalmide	268
Dimethyl sulfoxyde	268
1,4-Dioxane	215
Ethanol	210
Isopropanol	120
Methanol	205
Tetrahydrofuran	215
Water	200
Benzene	280
n-Butanol	254
Carbon Tetrachloride	263
Chloroform	245

Solvent	UV (nm) Cutoff @1AU
Cyclohexane	200
1,2-Dichloroethane	235
Dichloromethane	235
Ethyl Acetate	260
Diethyl ether	220
Heptane	200
Hexane	200
Iso-octane	215
Methyl tert-butyl ether	210
Butanone	329
Pentane	200
Toluene	285
Xylene	290

- **Limits of detection:**

The mobile phase can also interact in the detection and can absorb at a specific wavelength => solvent cut off.

Every compounds have their own molecular extinction coefficient.
Due to this property, the apparent equivalent absorbance of 2 compounds should lead to 2 different concentrations.
According to the Beer-lambert law, absorbance of each molecule will be linked to its own concentration.

$$A = \varepsilon C l$$

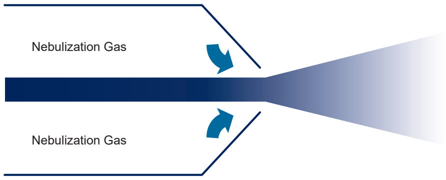
C = concentration in mol/L
l = cell length in cm
ε = molecular extinction coefficient (L.mol-1.cm-1)

The absorbance is improved when the cell path is increased.

Evaporative Light Scattering Detector (ELSD)

Principle:

ELSD detection is a three steps process:



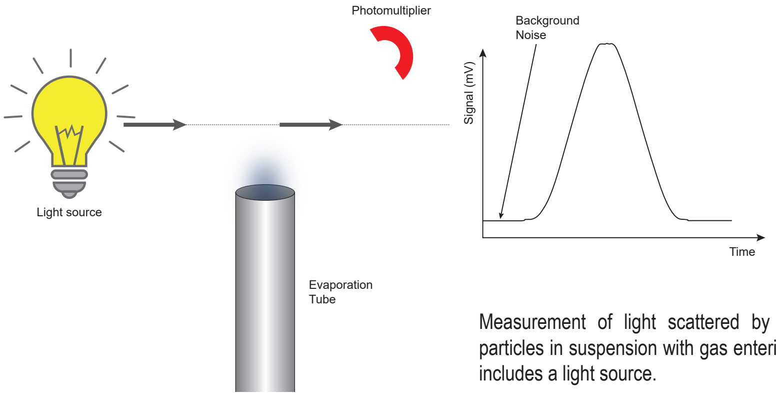
- **Nebulization**

The nebulization is done, in a nebulization chamber, with a venturi nebulizer that generate droplets of mobile phase containing the compound of interest, the largest droplets are eliminated. Compressed dry air or Nitrogen are used as nebulization gas.

- **Evaporation**

The evaporation is set in a drift tube. The nebulized eluent goes through a heated drift tube to evaporate the mobile phase. The temperature is optimized in function of the nature of the solute and the mobile phase. For low or non volatile compounds, the temperature of evaporation is increased to improve the detection.

- **Detection of light diffusion using a Photomultiplier or a Photodiode:**



Measurement of light scattered by a stream of solid particles in suspension with gas entering a flow cell which includes a light source.

- Detection is obtained by the measure of the intensity of the scattered light.
- A significant difference of volatility between the mobile phase and the compound is necessary.
  Caution must be consider for semi and highly volatile compounds detection as the signal is only generated by non-evaporated compounds.

Mobile Phase	Solute
100% Volatile	Non-Volatile
↓	↓
No Signal	Signal (Peak)

- Both isocratic or gradient mode can be used
- There is no solvent restriction as long as it can be evaporated before detection and except: phosphate, sodium, sulphate, potassium, HCl and H_2SO_4 buffers that are forbidden.
- ELSD response has not a linear reponse with the concentration of the compound.

Caution:

The ESLD is a destructive method of detection for the sample.
As for purification recovery is the one of main goal, the lowest quantity possible of sample has to be sent into the ELSD.

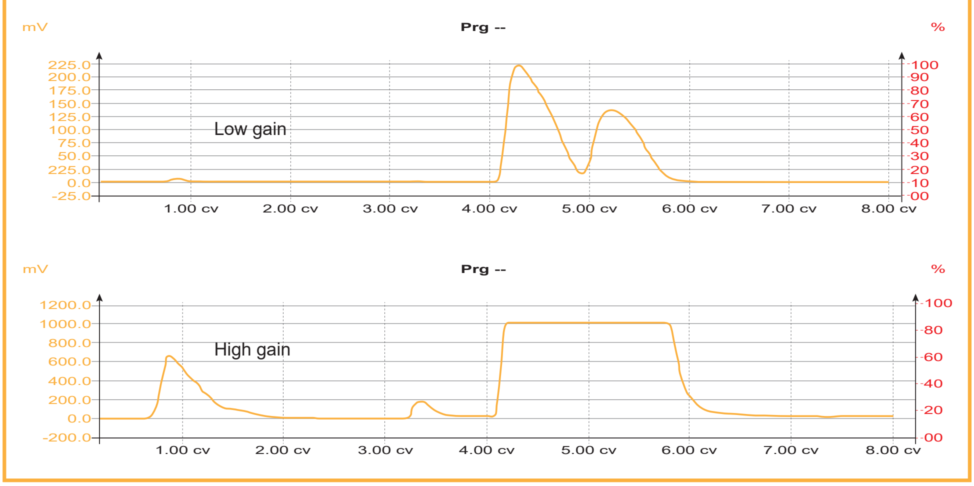
SAGA Function

Interchim® developed with Sedere an innovative automatic gain (SAGA: Sedex Automated Gain Adjustement). This technology adapt the gain to avoid saturation while continuing the detection of small quantity of products. ELSD becomes almost unsaturable without an impact on sensitivity.

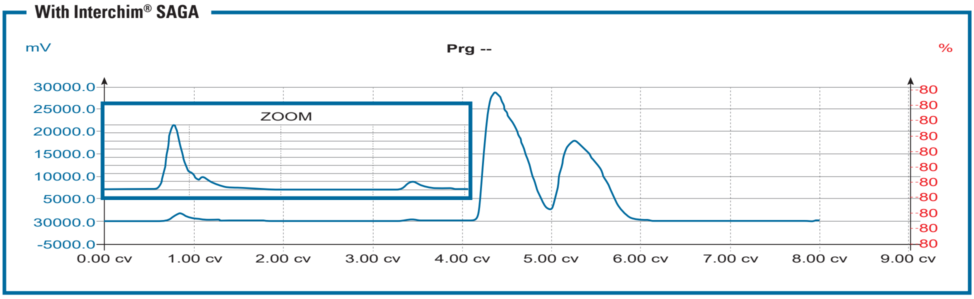
Application: Separation of 2 diastereo-isomers

Injection of 5mL (625mg of each compound)
Column: PF-15SIHP-F0025
Flow rate: 15mL/min

Without Interchim® SAGA



With Interchim® SAGA

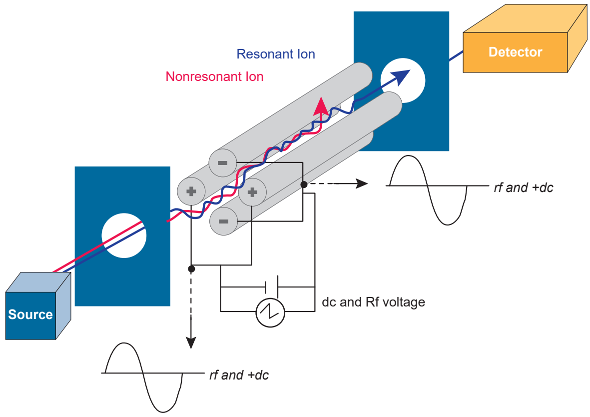


This advanced technology allows to detect all compounds regardless the quantity to purify.
Impurities can be seen even if a concentrated peak is close.

- Simplicity => automatic gain adjustment according to the sample load.
- Flexibility => manage both small quantity (2mg) and higher sample loading (up to 20%) within the same run.
- Confidence => numbers of class of compounds can be detected.

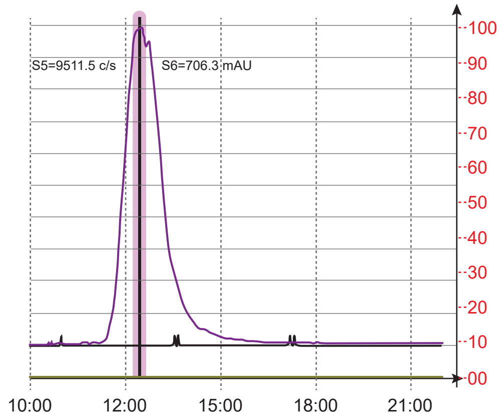
Mass Spectrometer Detectors (MS)

A Mass Spectrometer measures the mass to charge ratio (m/z), so it converts sample compounds into ions. The ions fly under vacuum are sorted and separated according to their mass to charge ratio under the influence of an electrical and or a magnetic field. The detection system measures the amount of ions.

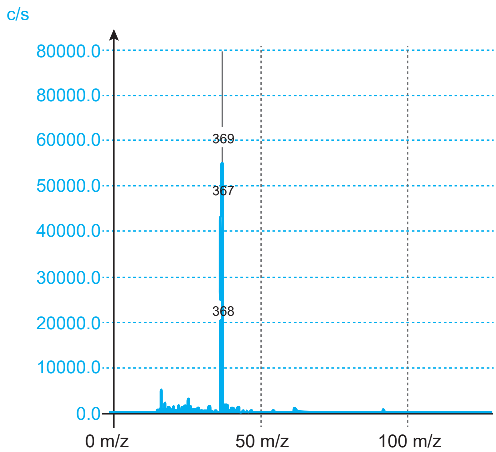


A mass spectrometer measures the spectrum over time (a sequence of spectra) to produce chromatograms

- **TIC** - Total Ion Chromatogram - adds all the masses together and shows how the entire mass spectrum varies with time - like a UV signal
- **XIC** (or EIC) - Extracted Ion Chromatogram - show how one mass varies with time, allows you to identify where your peak of interest elutes.



TIC (total ion chromatogram)
or XIC (extracted ion chromatogram) in function
of the time or column volume



Mass spectrum corresponding showing
the m/z ratio with the maximum intensity

The MS detection is applicable to a broad range of organic compounds. As well as providing chromatographic data it definitively identifies the compound by confirming its mass.

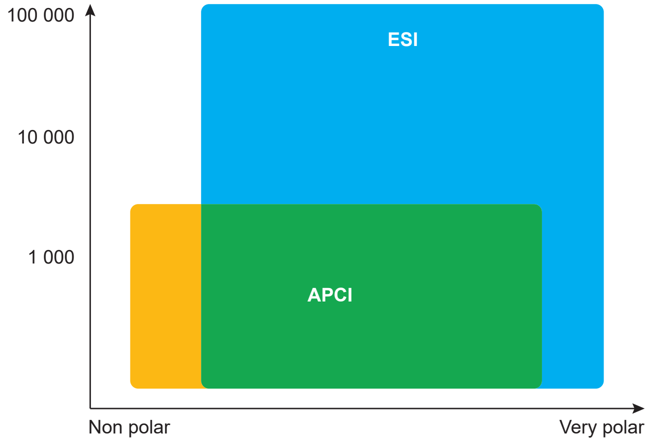
The ionization of the compounds is made by a source.

No Ion Source is universal, selection depends on the compound to be analyzed and the mass spectrometer type.

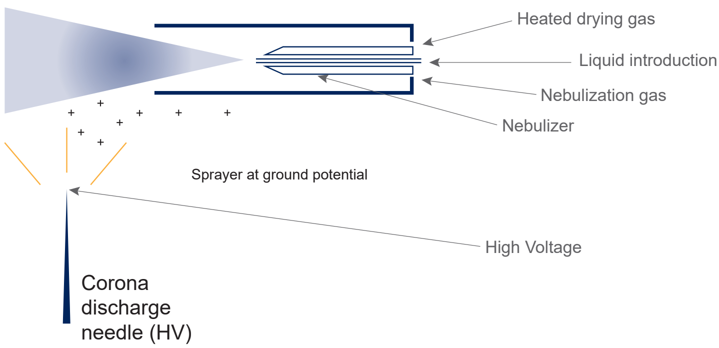
Two of the most common Ion Sources are Electro spray and Chemical Ionization and they can only be used with gas source (nitrogen).

APCI and ESI generally ionize by proton transfer:

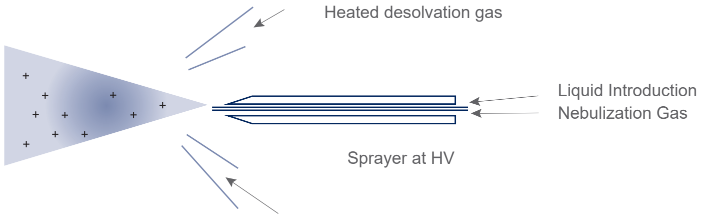
- Acceptance of a proton to produce [M+H]+ in positive ion
- Abstraction of a proton from the analyte to produce [M-H]- in negative ion. Ionization may also occur by forming adducts with other species
- e.g. NH_4^+ (+18), Na^+(+23), K^+(+39), Methanol (CH_3OHH^+, +33), Acetonitrile (CH_3CNH^+, +42), Acetic Acid (CH_3COOHH^+, +61)



Atmospheric Pressure Ionization Source (APCI)



Electrospray Ionization (ESI)



Electrospray is produced by applying a strong electric field to a liquid passing through a capillary electric field to a liquid passing through a capillary tube with a weak flux.

Desolvation by gas flow (N_2) heating (100-300°C).
Ions are preformed in solution before nebulization

Ion Sources: APCI & ESI

Electrospray (ESI)

Volatility not mandatory
Technique adapted to heat-labile compound
Ions formed in solution
Can form multi-charged ions

APCI

Volatility needed
Compounds must be thermally stable
Ions are formed in the gas phase
The ions are singly charged

Why choose APCI for purification ?

- Better for neutral compounds than ESI
- Simpler spectra than ESI: more often the molecular M+H ion, less adducts, fragments dimers, No multiple charging
- Generally 'Easy To do': less sensitive to operating conditions that ESI
  less solvent dependence as ionization occurs in the gas phase
  less matrix suppression
- Can accept higher sample concentrations
- More sensible than ESI: less noise at high flow rate (>750 mL/min)
  However, samples must be sufficiently volatile to be vaporized, & thermally stable to 130 - 150 °C
  ESI might be considered for Reverse Phase and is essential for biological molecules.

Applications vs. Sources

Proteins, peptides, RNA, sugars, carbohydrates, PPG's...

Most drugs, metabolites, aromatic compounds containing at least one ionizable functional groups taht can be protonated / deprotonated like NH_2, CO_2H, SO_3H, Ph-OH.

Small (<1.000u) volatile, polar and neutral molecules, steroids.

Neither Ion Source works for:

Napthalene, biphenyl, PAH's with no heteroatoms, hydrocarbon waxes, resins and glues

The Mass spec. is a destructive method of detection for the sample.
As for purification recovery is the one of main goal, the lowest quantity possible of sample has to be sent into the MS.

Interchim developed a **Unique interface "Split & Dilution in a box"** to avoid saturation of the MS spectrometer whatever the concentration of sample injected is. It does not generate additional backpressure even at high flow rate.

It is combined to a normalized scale of MS signals, UV, ELSD by Interchim software.

Triple Detection: UV-ELSD-MS

To Sum-up the detectors are compounds dependent.

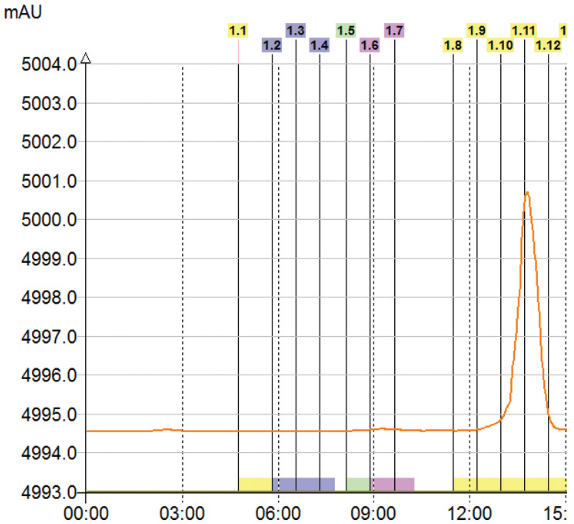
	UV	ELSD	MS
Detection	Chromophore	Non volatile at the working temperature	Ionizable Gives an indication on the compounds structure

To be sure to detect and collect all the compouds a combination of several detectors is advised.

A triple detection UV-ELSD-MS can be easily used with a puriFlash® system.

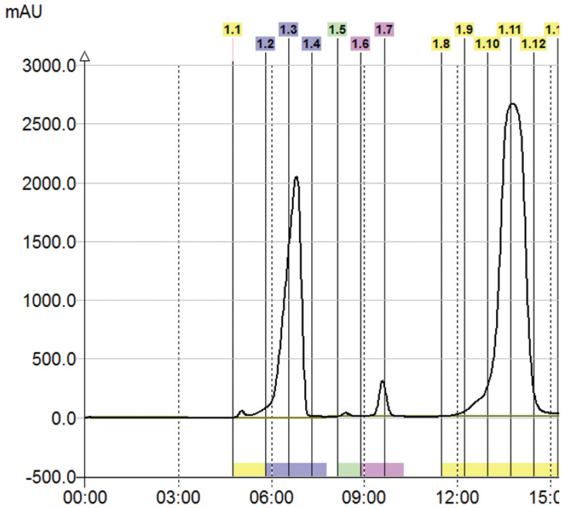
Application example: customer mixture using PF system with triple detection

UV Signal



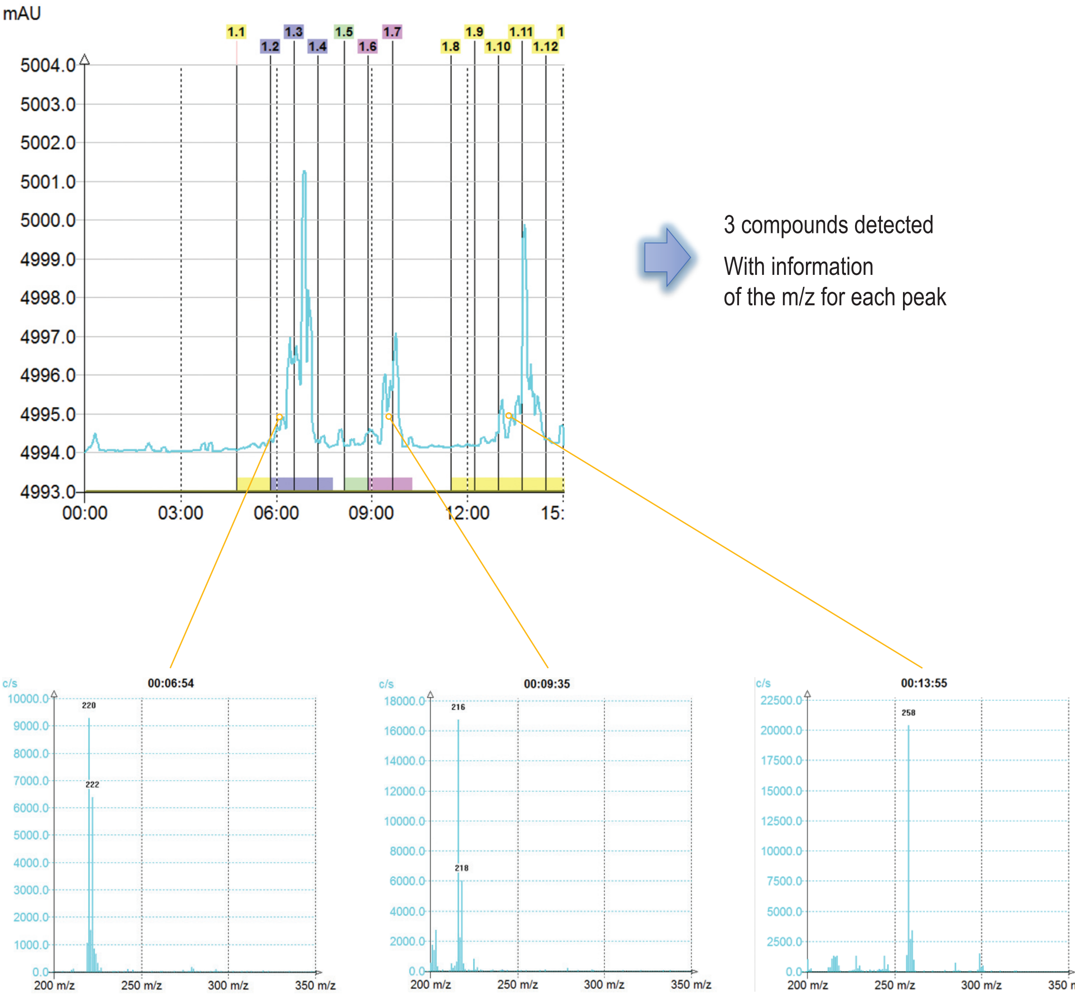
Only 1 compound detected

ELSD Signal



3 compounds detected

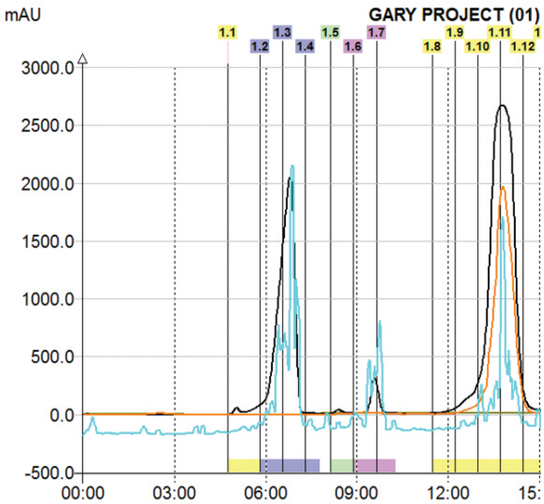
MS TIC Signal



3 compounds detected

With information
of the m/z for each peak

Triple Detection



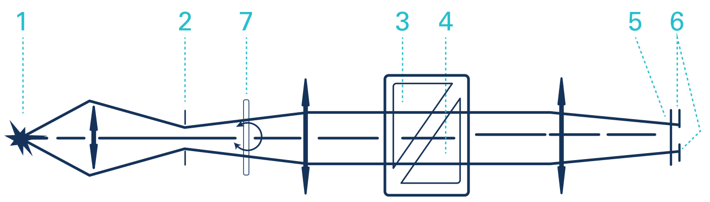
In this example with only UV detection customer would have collected only one product instead of 3 with the triple detection. Moreover, with the MS he was able to identify his interest compounds.

Refractive Index Detector (RI)

The RI detector measures the refractive index of an analyte relative to the solvent.

A light beam crosses a 2 compartments cell in which one is filled with the solvent and the other with the column effluent. So, this is a difference of refractive index of the 2 liquids which is measured.The greater the RI difference between sample and mobile phase, the larger the imbalance will become so the sensitivity will be higher. There is no detection if the refractive index of the compound is too close to the solvent refractive index.

Optical system



1: AsGa diode 940nm
2: Input slit
3: Reference cell
4: Sample cell
5: Mask
6: Photocells
7: Optical zero adjustement

Limits of Detection:

RI detector is a pure differential instrument, and any changes in the eluent composition require the rebalancing of the detector. This factor is severely limiting RI detector application in the analyses requiring the gradient elution, where mobile phase composition is changed during the run.

Method Development & Optimization

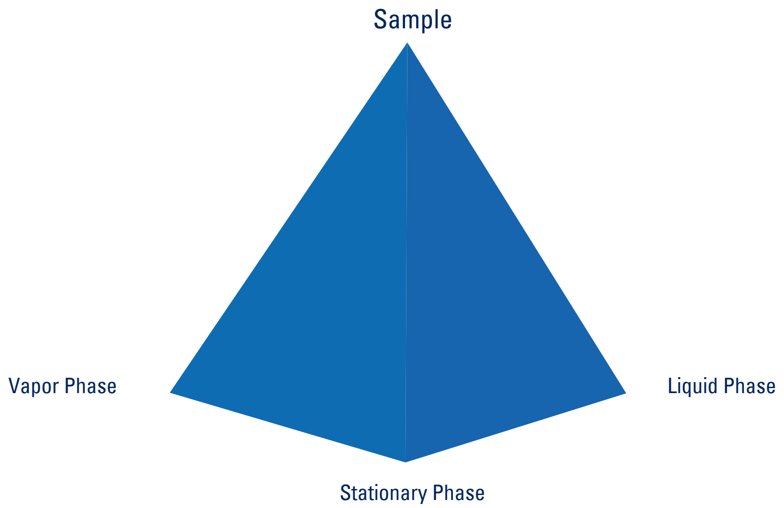
TLC Fundamentals

Basic principle:

TLC, compared to liquid chromatography on column, shows differences:

The mobile phase discovers the stationary phase while moving through the plate. The thin layer is not in equilibrium with the elution solvent, as it is the case in a column, but with the solvent vapors contained in the development chamber.

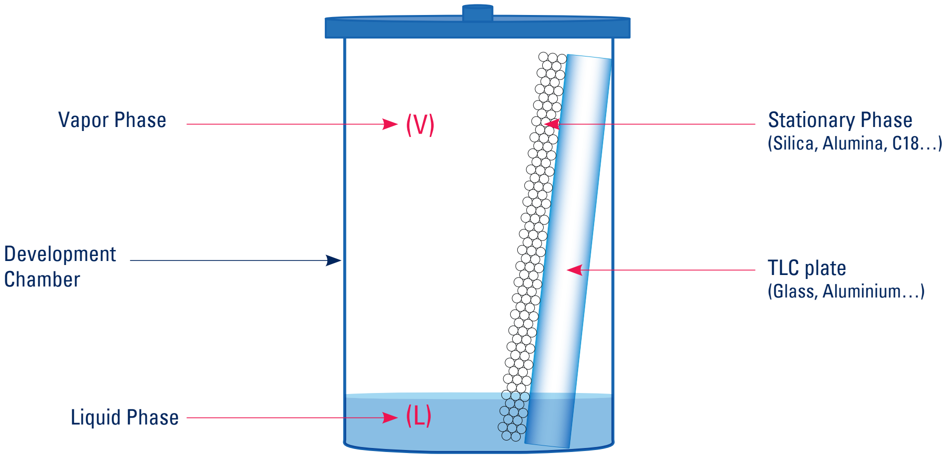
To set up a TLC analysis, 4 parameters have to be considered.



Basic principle:

TLC is a chromatography where each of the solutes remains the same time in contact with the mobile and the stationary phases. They travel different migration distances according to their interactions with the phases, whereas in an HPLC column, solutes go through the same total distance. They express a different residence time.

In TLC, the retention of each of the solutes is then characterized by the frontal ratio Rf, whereas on column it is characterized by the retention factor k.
(In the case of a preparative column, the volume of retention, of the mobile phase required to elute the solute, is a considered value.).



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Basic principle:

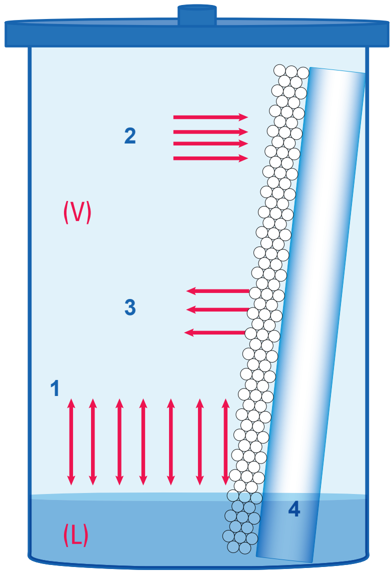
Interactions description :
Specificity of the TLC related to evaporation phenomena

1: At the liquid (L) - vapor (V) balance, the mobile phase and the vapour phase compositions are not similar because the vapour pressure of the solvents used are generally not the same. At the liquid (L) - vapor (V) balance, according to the composition of the development phase and the respective vapor pressure of its components, the composition of the vapor phase is not the same as the development phase.

2: The dry stationary phase equilibrates with the vapor phase (V) (adsorption saturation). The vapors of polar solvents are much more adsorbed than those of apolar solvents. The composition of the adsorbed phase is different from those of the vapor phase (V) and the development phase (L).

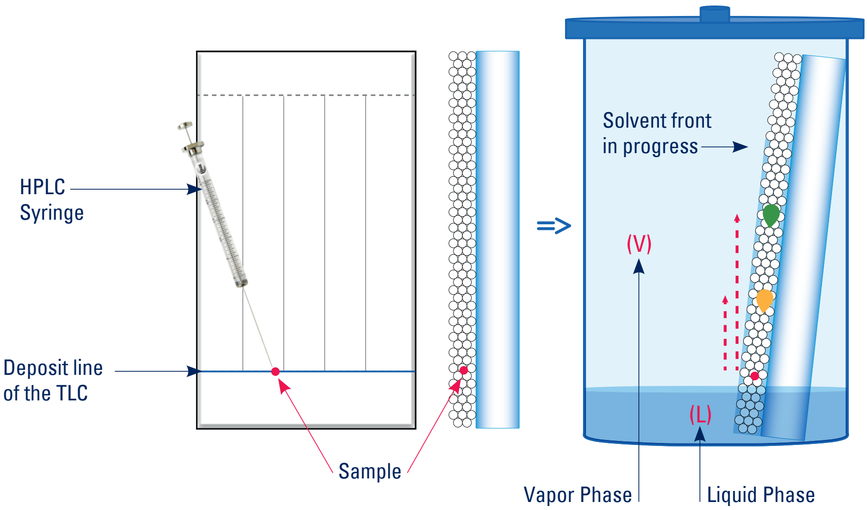
3: During migration the wet stationary phase is re-equilibrated with the vapor phase (V). This concerns the less polar solvents and the more volatile of the migrating liquid.

4 : During the migration the components of the mobile phase can be separated by the stationary phase which leads to secondary fronts.



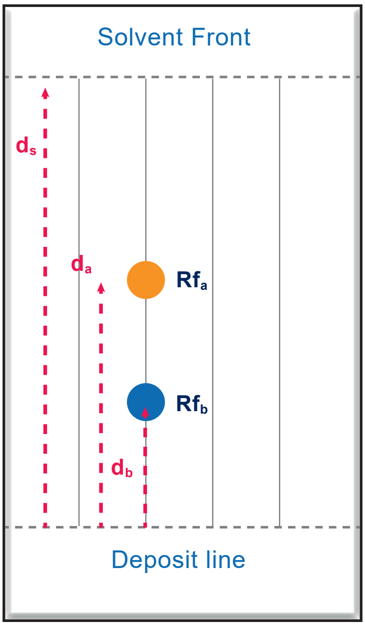
Basic principle:

The sample is dropped off, with a capillary, on the deposit line of the TLC plate which is then immersed in the tank containing the mobile phase. This one ascends through the stationary phase by capillarity carrying each compound which moves at its own velocity behind the solvent front according to its affinity for the stationary and the mobile phases.



Basic principle:

In TLC, the “retention factor” (Rf) is defined by the ratio of the distance traveled by the analyte (da) over the distance traveled by the solvent front (dS).



$Rf_a = d_a / d_S$
$Rf_b = d_b / d_S$

In practice, it is necessary to reason in the amount of mobile phase necessary to use to elute the solute out of the column. To take into account there different geometries, this retention volume is expressed relative to the void volume of the column used.

It is a dimensionless number identified by the acronym CV (also called Vs)

$Vs_a = CV_a = 1/Rf_a = 1 + k_a$

$Vs_b = CV_b = 1/Rf_b = 1 + k_b$

$\Rightarrow \Delta CV = CV_b - CV_a$

There is a mathematical relation between CV and the retention factor k in liquid HPLC =>

$k = K_{tr}\, x(1/Rf - 1)$ et avec $K_{tr} = cste = 1$
$\Rightarrow \Delta k = K_{tr}\, x[(1/Rf_b - 1) - (1/Rf_a - 1)]$
$\Rightarrow CV = \Delta k$

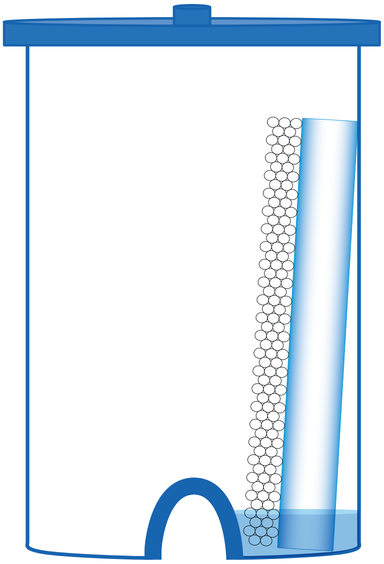
In practice, it is necessary to control the experimental conditions to obtain reproducible TLC analysis.

Operational modes:

Different operational modes are commonly used to make aTLC plate => Unsaturated, Saturated, Pre-Conditioning & Sandwich

For all of those, double tray chamber are recommended.

> The equilibration of the stationary phase with the mobile phase has a strong influence on the repeatability of a thin-layer chromatography.



1. Unsaturated mode:
Compared to other modes, no equilibration leads to thinner spots (bands) and larger RFs.
However there are secondary fronts due to mobile phase de-mixing.

One tray is filled with the mobile phase.
Just after, TLC plate with "dropped off" compounds is placed as vertically as possible in the same tray.

This technique leads to low repeatability vs. others mode.

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Operational modes:

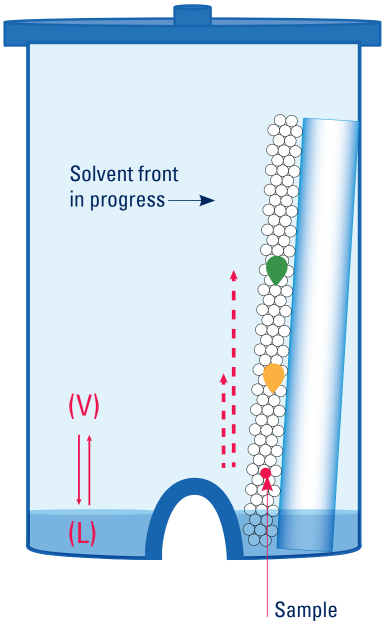
2. Saturation mode:
Equilibration of the development chamber with saturation by the solvent vapors.

The both trays are filled with the development phase.
A sheet of paper, vertically placed, dips into the mobile phase of one of the trays. Wait 20/30 minutes so that the mobile phase goes up by capillarity on the paper and is homogenized in vapor concentration.

By liquid-vapor equilibrium, the gas phase recondenses on the plate and wets it throughout its height.

After moving the lid laterally, the TLC plate is placed as vertically as possible in the second tray. Driven by the mobile phase, from the bottom of the chamber, solutes travel through the stationary phase in equilibrium with the adsorbed mobile phase.

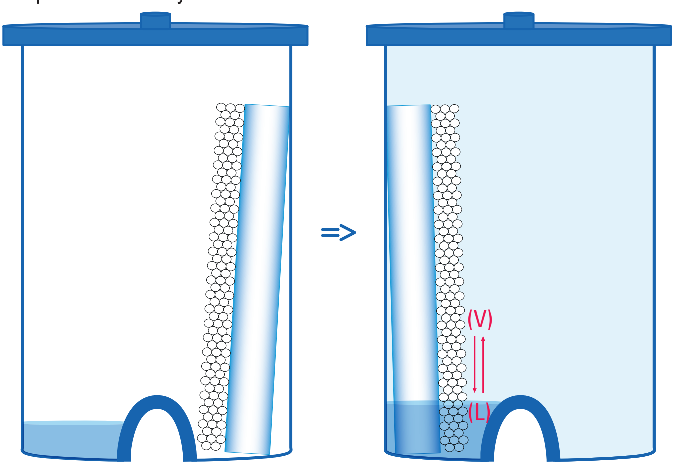
This technique gives better reproducibility and with closer HPLC conditions vs. others mode.



Operational modes:

3. Pre-conditioning mode:
The development phase is introduced into one of the tray of the chamber. Simultaneously, TLC plate is placed as vertically as possible in the second empty tray. 20 to 30 min are necessary to sature the chamber and homogenize vapor and liquid phase in concentration. At vapor equilibrium, the gas phase recondenses over the plate and wet it throughout its length. Then, the plate is switched from the tray to the other one.

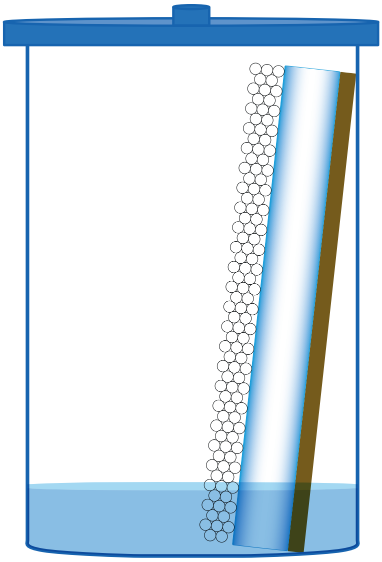
This technique leads to more diffuse spots and weaker Rf compared to the unsaturated mode.
However, it provides reproducible analysis with close HPLC conditions.



Operational modes:

4. Sandwich mode:
A counter-plate is placed a few mm from the TLC. To be more efficient a pad can be put vertically behind each of the two plates. The one behind the back plate must be shorter so that there is no transfer on the top of the separator plate. The more the equilibration between the liquid and vapor phase is reached, the more the adsorbed layer becomes homogeneous over the entire length of the plate.
It works under unsaturated, saturated or preconditioning mode either.

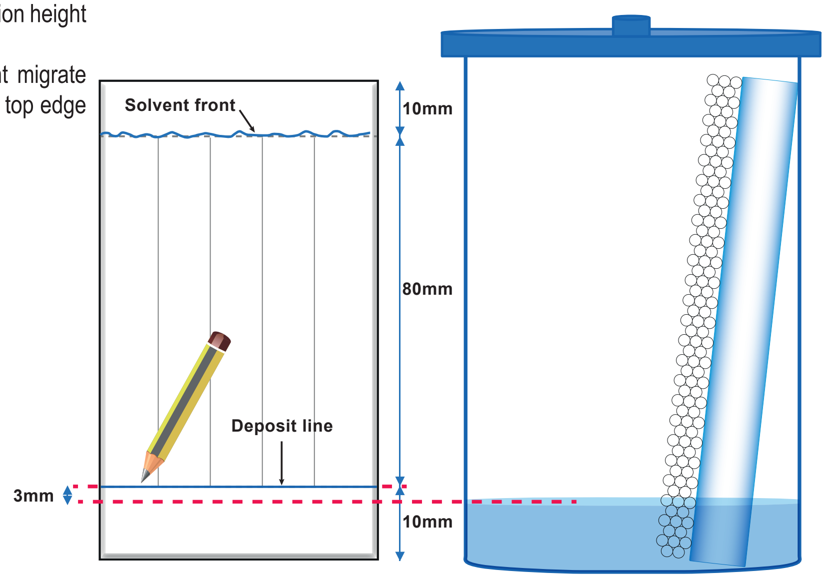
This technique leads to reproducible analysis with closer HPLC conditions.
Useful for complex analysis.



How to make a successful TLC plate:

1. Deposit line & Solvent front
Plot the deposit line with a pencil at 3 mm above the mobile phase level.

Recommended migration height is at least 8 cm.
Make the solvent front migrate at up to 1 cm from the top edge of the TLC plate.



How to make a successful TLC plate:

2. How to make the deposit

a) Sample concentration

it is necessary to avoid over-loading

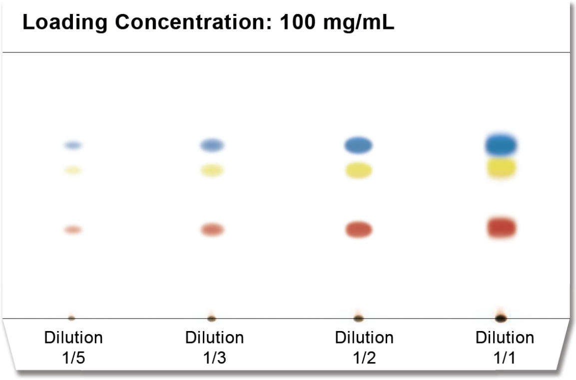
State of the art =>

for a standard: concentration of 0.1mg/L

for the sample: concentration must not exceed 2%

b) Deposit size

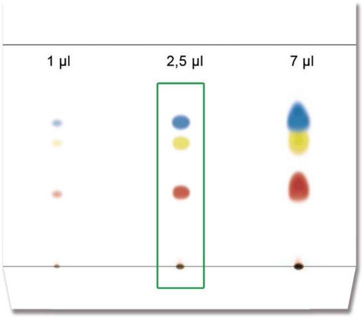
The deposit must be spreaded at the minimum possible (smallest possible volume) otherwise there is a loss of separation.



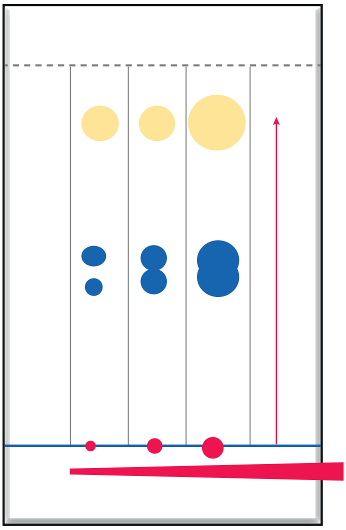
If the chemist wants to make several deposits, it is necessary to dry the plate between the successive deposits. The plate must be left to dry for 10min at room temperature before its development.

How to make a successful TLC plate:

Influence of the size of the deposit on the separation - Dimensions of the spots according to their Rf.



TLC calibration study in concentration is important to achieve the best optimization.



a) Spot ø increase with Rf

b) if the height of development is too important => significant dilution, detection difficulties

a large deposit => a loss in separation.

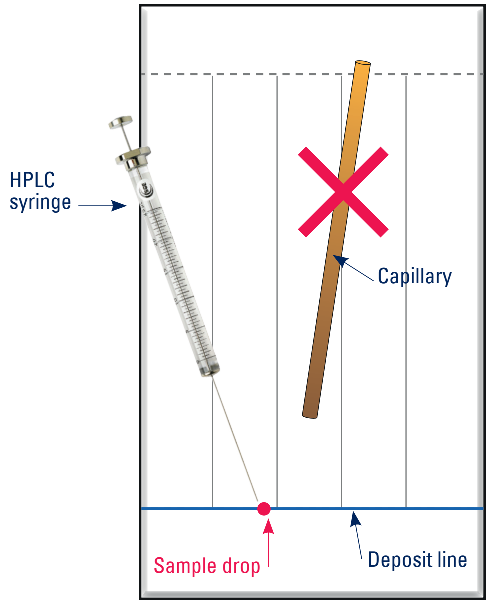
How to make a successful TLC plate:

3. Deposit of the raw sample

a) Spot mode:

By capillarity using an HPLC syringe or a capillary, there is a more or less deep penetration of the solute in the adsorbent layer. The finest deposit spots are obtained with a syringe rather than a capillary.
Using this mode of deposition mode, spots are more or less deformed

Load the smallest drop as possible to avoid dispersion caused by overloading which could affect the compounds resolution.
Avoid touching the TLC plate with the deposit tool to limit compounds penetration deep in the layer of the plate.
Spot density and dispersion may vary with solvent polarity.
Do not place the spot too close to the edges of the plate.



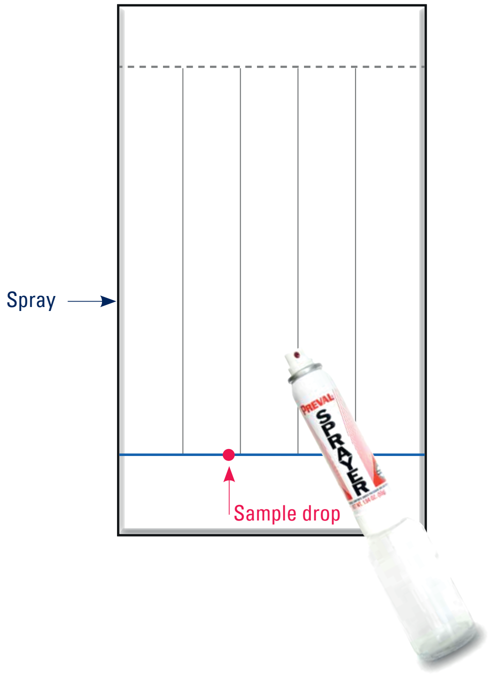
How to make a successful TLC plate:

3. Deposit of the raw sample

b) Spray mode:

By using a spray bottle, the spray speed must be slower than the evaporation velocity to avoid any projection.

Using this mode, there is little penetration of the solute into the adsorbent layer staying on the surface.
The eluted spots are less spreaded out.
Using this spray mode the separation of the migration spots is optimal.



How to make a successful TLC plate:

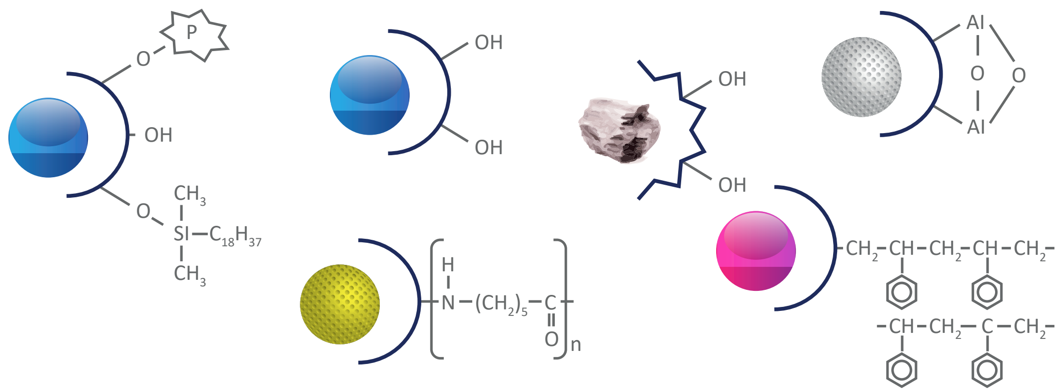
Solvent of dilution
It must have a weak elution force, be very pure.
It must be sufficiently polar to dissolve the sample (but not too much to be easily eliminated)
The use of bases and acids should be limited
Avoid viscous and high-boiling solvents (N,N-Dimethylformamide, DMSO, BuOH, water), as the migration time of the solvent will be longer.
It is necessary to dry the plate between two successive deposits

Solvent of elution
Adapt the elution strength according to the compounds polarity to keep Rf in the optimal zone (0.15 - 0.35).
The mobile phase velocity is not constant over the entire length of the plate.
Use the same mobile phase for TLC & Flash purification

Preparation of the mobile phase to ensure a perfect transfer to Flash purification =>
Solvents must be measured precisely in volume using separated flask (check the precision of the flask).
Low volume in % can be measured using syringe to ensure greater precision.

Stationary phase choice:

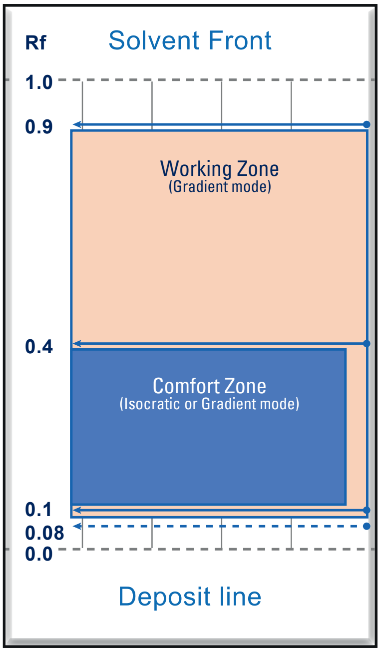
The choice of sorbent depends on the nature of the compounds to purify => polarity, functional groups.
The retention of compounds is very different depending on the sorbent used.
To avoid stain deformations, silica is generally chosen for the acidic compounds & alumina for the basic compounds.
Non-bonded polar stationary phases: silica, alumina, etc. are materials extremely eager of water.
If kept under open air, they lose their activities by quickly absorbing atmospheric water (50% in less than 3 min). This can lead to completely different separations in between two plates from the same batch that been left at ambient air and carried out at different times.
It is recommended to keep the plates in a desiccator, possibly under vacuum, in the presence of a desiccant.



Mobile Phase choice:

What is the ideal distribution of stains on a plate:
To get a good location accuracy of the center of the spots and to calculate the Rf it is necessary that they are distributed regularly in the Rf range from 0.08 to 0.9. The best is a spot distribution between 0.1 and 0.4 with a minimal ΔCV.

With silica and alumina the more the mobile phase is polar the more the solutes are eluted towards the front of the solvent, towards large values of Rf (Rf ≥ 0.6). Conversely, the more the mobile phase is none-polar, the less the solutes are entrained and the closer they stay to the deposit line with low values of Rf (Rf ≤ 0.1).



Mobile Phase choice:

The mobile phase has the following role:
- Dissolution of the sample
- Desorption of the sample from the stationary phase
- Transport of the sample at an acceptable migration distance

In general, the mobile phase must be:
- As simple as possible (maximum 3/4 components)
- None-toxic
- From a chromatographic quality
- Specific to not generate side reactions
- Selected to avoid demixing (vapor pressures, equivalent polarities)
- Having a low viscosity

Eluent strenght on different stationnary phases:
ε_0 silica = 0.77ε_0 alumina
ε_0 diol = 0.3ε_0 silica = 0.23ε_0 alumina
ε_0 florisil = 0.52ε_0 alumina
ε_0 magnesie = 0.58ε_0 alumina

Polarity of mobile phases:
- The concept of polarity of the chemical species and the different scales of polarity are described in the purification chapter.

How to control retention:
Two solvents with total missibility parameter values δT , eluent force $\mathcal{E}°$or polarity P 'equal or very close will lead, for the same compound, to neighboring or equal retention parameters (even k, or even Rf).

How to change the separation by keeping the retention with same magnitude:
By cons for a pair of solutes with a slightly different polarity, the selectivity (separation of spots) will not be the same for two solvents with identical polarity (δT ou $\mathcal{E}°$ identical or similar) as they express different partial dominant polarity (Partial polarities of solvents must be taken into account).

Mobile Phase choice:

The classification of solvents according to Trappe is expressed in eluotropic series classified by increasing eluent force:

- Based on the adsorption energy per unit area of the stationary phase
- Depends on the stationary phase
- The classification uses pentane as a reference.
- Eluotropic series on different adsorbents:

Solvents List	ε^0 Silica Virgin	ε^0 Alumina	ε^0 Silica Diol	ε^0 Silica CN	ε^0 Silica NH_2	ε^0 Silica C18.C4.C8.PH.RPAQ	ε^0 Magnésie	ε^0 Florisil
Acetone	0.470	0.560	0.141	0.470	0.470		0.325	0.291
Acetonitrile	0.501	0.650	0.150	0.501	0.501	0.577	0.377	0.338
Benzene	0.246	0.319	0.074	0.246	0.246		0.185	0.166
Butanol	0.550	0.714	0.165	0.550	0.550		0.414	0.371
Carbon tetrachloride	0.139	0.180	0.042	0.139	0.139		0.104	0.094
Chloroform	0.260	0.400	0.078	0.260	0.260		0.232	0.208
Cyclohexane	0.030	0.0400	0.000	0.000	0.000		0.023	0.021
Cyclopentane	0.000	0.05	0.000	0.000	0.000		0.029	0.026
1.2-Dichloroethane	0.339	0.490	0.102	0.339	0.339		0.284	0.255
Dichloromethane	0.323	0.420	0.097	0.323	0.323		0.244	0.218
Diethylamine	0.485	0.630	0.146	0.485	0.485		0.365	0.328
Diethyl ether	0.385	0.380	0.115	0.385	0.385		0.220	0.198
Diisopropyl ether	0.223	0.280	0.067	0.223	0.223		0.162	0.146
N.N-Dimethylformamide	0.640	0.831	0.192	0.640	0.640		0.482	0.432
Dimethyl sulfoxide	0.470	0.620	0.141	0.470	0.470		0.360	0.322
Dioxane	0.490	0.560	0.147	0.490	0.490		0.325	0.291
Ethanol	0.677	0.879	0.203	0.677	0.677		0.510	0.457
Ethyl acetate	0.380	0.580	0.114	0.380	0.380		0.336	0.302
Heptane	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Hexane	0.000	0.010	0.000	0.000	0.000		0.006	0.005
Hexanol	0.385	0.500	0.115	0.385	0.385		0.290	0.260
Isooctane	0.000	0.010	0.000	0.000	0.000		0.006	0.005
Isopropanol	0.590	0.820	0.177	0.590	0.590		0.476	0.426
Isopropyl chloride	0.223	0.290	0.067	0.223	0.223		0.168	0.151
Methanol	0.732	0.950	0.219	0.732	0.732	0.450	0.551	0.494
Methyl acetate	0.393	0.510	0.118	0.393	0.393		0.296	0.265
Methyl ethyl ketone	0.393	0.510	0.118	0.393	0.393		0.296	0.265
Methyl tert-butyl ether	0.470	0.610	0.141	0.470	0.470		0.354	0.317
Pentane	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Petroleum ether	0.000	0.010	0.000	0.000	0.000		0.006	0.005
Propanol	0.631	0.819	0.189	0.631	0.631		0.475	0.426
Pyridine	0.550	0.714	0.165	0.550	0.550		0.414	0.371
Tetrahydrofuran	0.346	0.449	0.104	0.346	0.346	0.726	0.261	0.234
Toluene	0.223	0.290	0.067	0.223	0.223		0.168	0.151
Water						0.000		

Mobile Phase choice:

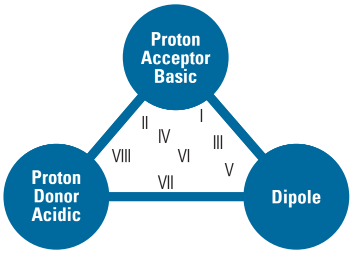
Solvent selectivity according to Snyder chart:
The retention of compounds is different according to selectivity group.

Based on the chemical structure of the compound choose, a solvent which interacts with compounds and is from different solvent group.

If the resolution is not achieved then try an alternative eluting solvent.

Based on the solvent selectivity, the choice of the solvent will be different for purification with normal phase, reversed phase or other technique.

Solvent Selectivity Group Triangle



Solvent Property	Example Solvent	Interacting Compounds
Dipole	Dichloromethane	Corbonyl, nitriles, sulphonates, amides
Proton acceptor	Amines, ammonia	Alcohols, acids, phenols
Proton donor	Alcohols, chloroform	Amines, sulphonamides

Solvents	Polarity	Group
Hexane	Low	
Heptane		
Cyclohexane		
Chloroform		VIII
Toluene		VII
Dichloromethane		III
Tetrahydrofuran		V
Ethyl acetate		VI
Diethyl ether		I
Acetonitrile		VI
Acetone		VI
2-Propanol		II
Ethanol		II
Methanol		II
Water	High	VIII

LR Snyder, J Chromatogr. 92 (1974) 223
LR Snyder, J Chromatogr. Sci 16 (1978) 223

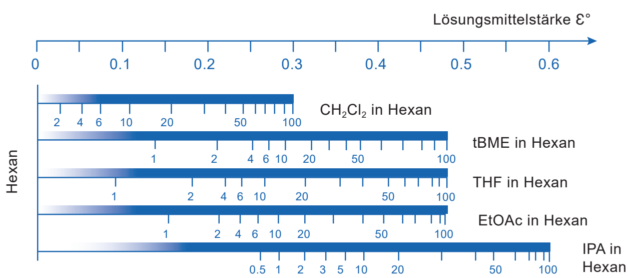
Method for experimental determination of mobile phase composition:

1st stage => Make TLCs with 8 (10) pure solvents of increasing polarity
A solvent for which all the solutes are in the expected Rf range ($0.1 \leq Rf \leq 0.4$ (comfort Zone) or $0.08 \leq Rf \leq 0.9$ (working zone))

if separation considered correct => it is done
if separation considered to be incorrect => start the 2nd step

If with this first pure solvent the solutes are not all in the expected Rf range =>
find the solvent such that the 1st spot has the expected minimum Rf.
look for the solvent such that the last spot has an Rf equal to the maximum Rf desired.
Once these two solvents are fixed => start 3rd stage

2nd stage => the Ɛ° value of the solvent which placed all the solutes in the right zone but with a bad selectivity is known. Use abacuses to find different mobile phase of binary compositions with the same Ɛ° value



from M.D. Palamareva et V.R. Meyer, J. Chromatogr. 641, 391, (1993)

=>TLCs are made from which one finds the best mobile phase composition such that the separation of the least well separated spots is maximum.

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Method for the experimental determination of the composition of the mobile phase:

3rd stage =>

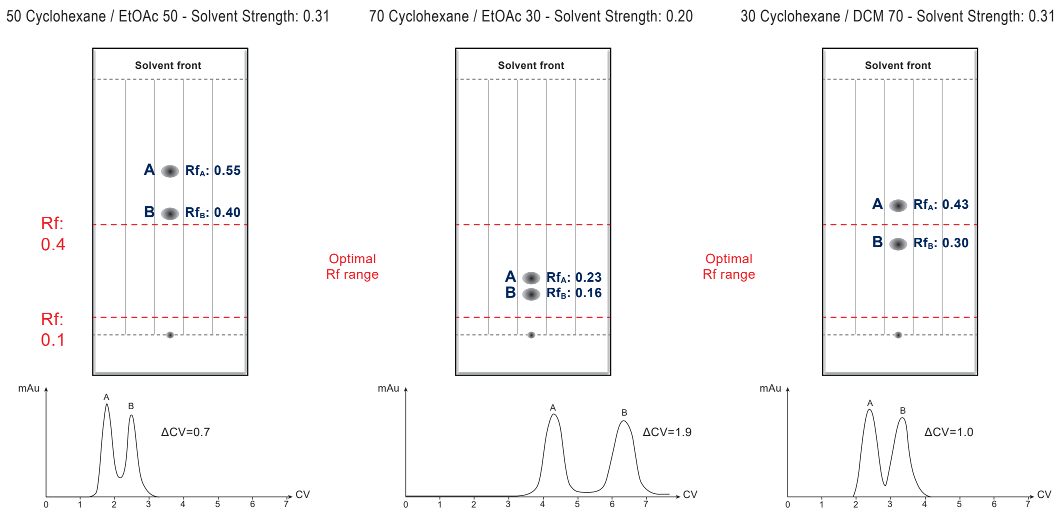
You know the domain $\Delta\varepsilon°$ which places all the solutes in the expected Rf domain and you look for the value of eluent force $\varepsilon°$ which actually places all the solutes in the expected domain.

Make mixtures of the two mobile phases =>

less eluent	more eluent
95%	5%
90%	10%
85%	15%
80%	20%

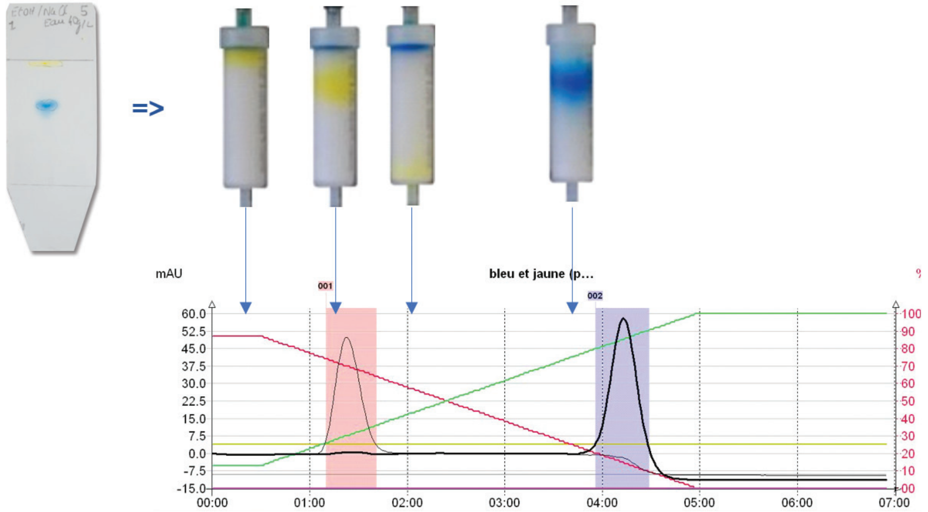
By iteration determine the good (better) composition and return to the situation of the 1st stage.

Impact of Mobile Phase selection:



First TLC shows 2 compounds which are not in the optimal Rf range, the separation is not achieved.
With the second TLC, 2 compounds are in the optimal Rf range and the resolution is better than the fisrt TLC. ΔCV is higher (1.9).
With the third TLC, Cyclohexane/Ethyl Acetate replaced by Cyclohexane/Dichloromethane (both 0.31 solvent strength). For a same eluent strength, the selectivity is different and the resolution is better but less important than the second TLC.

Method transfer from TLC's or HPLC's to Purification



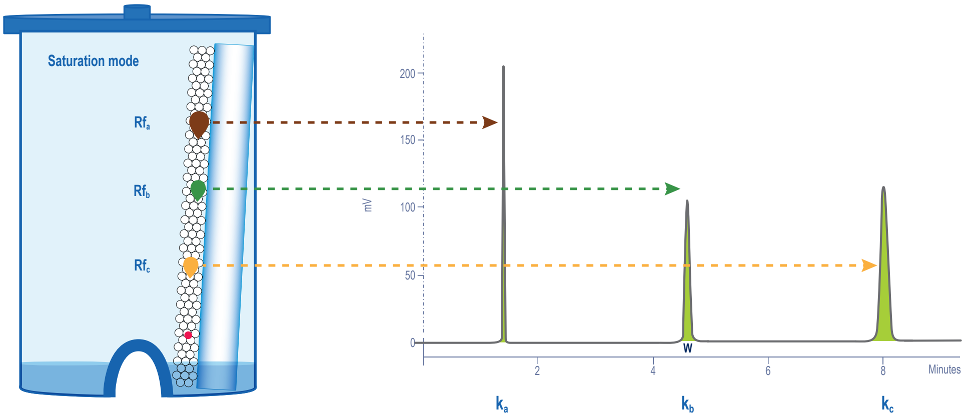
To be make possible any transpose from one chromatography mode ie, TLC, Open column, SPE, HPLC to another one ie, Flash, LC preparative, … without having the need to do any method adjustment, it is mandatory that:

a) Media of the two chromatographic modes must have the same surface chemistry.
b) Plates or columns must be stored under the same conditions to ensure the same degree of humidity.

As it is never the case, transfer laws are a guide but are never 100% reliable.

Method transfer from TLC's or HPLC's to Purification

In chromatography a mathematical relationship links the Rf to k and the mobile phase volume needed to elute the solute.
It is only valid for the same system => the same solute eluted at the same working temperature, by the same mobile phase on the same stationary phase with a saturation mode deposit (TLC) !



$\boxed{k = K_{tr} \times [1/Rf - 1]}$

Ktr ≈ 1 if medias are identical
(what is actually not exactly the case between silica from TLC and HPLC due to the binder and other modifiers.)

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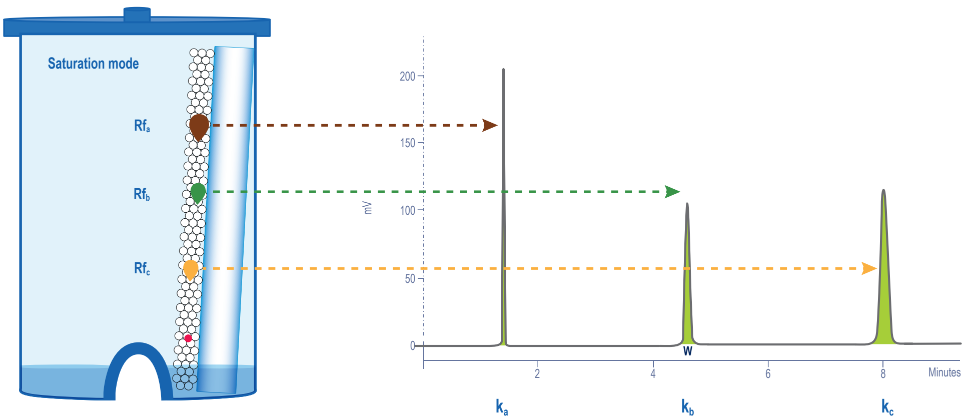
Method transfer from TLC's or HPLC's to Purification

Pragmatically the chemist is led to reason in the amount of mobile phase necessary to use to elute the solute from the preparative column.
To take into account the different geometries of the preparative columns, this retention volume is expressed relative to the void volume of the column used.
It is a dimensionless number identified by the acronym Vs (also called CV).



$V_r = V_0 \times [1 + k]$
$V_s = V_r / V_0 = 1/Rf = [1 + k]$

Vs = mobile phase volume needed to elute a solute (expressed in V0 units of the flash column)

Method transfer from TLC's or HPLC's to Purification

a) The Rf ratio does not correspond to the ratio of k

$$\boxed{\text{If}: K_{tr} \approx 1 \quad \alpha = k_b / k_a = [1 - Rf_b / 1 - Rf_a] \times [Rf_a / Rf_b]}$$

b) The resolution R is maximum for Rf = 0.3

$$R_{TLC} = .(2)\left[\left(\frac{Rf_B - Rf_A}{\omega_B + \omega_A}\right)\right]$$

$$R_{TLC} = .\left[\sqrt{\frac{N_A}{4}}\right]\left[\left(\frac{Rf_A - Rf_B}{Rf_B}\right)\right] = \left[\sqrt{\frac{N_B}{4}}\right]\left[\left(\frac{Rf_A - Rf_B}{Rf_A}\right)\right]$$

$$R_{TLC} = .(2)\left[\left(\frac{Rf_B - Rf_A}{\omega_B + \omega_A}\right)\right] \qquad R_{flash} = .(2V_0)\left[\left(\frac{Vs_B - Vs_A}{\omega V_B + \omega V_A}\right)\right]$$

for the same ΔRf:

1. the smaller the RFs are, the smaller the ω,
2. the greater ΔVs will be for the HPLC and flash, the higher the resolution will be in LC and flash.

Method transfer from TLC's to Purification

In practice, to transpose a TLC on a flash or a preparative column algorithms calculate from the Rf on the plate the retention factors of the solutes on the column in isocratic elution condition.

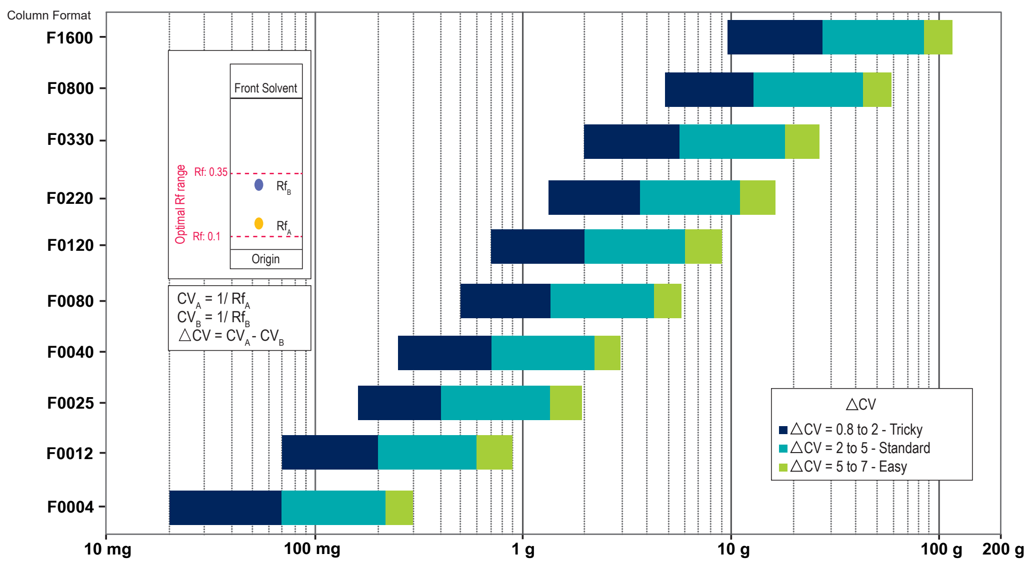
The minimal Δk which means the least well separated pair of peaks, identical to the ΔVs, evaluate whether the separation is easy or difficult.

$\Delta Vs < 1.5$	=> difficult purification
$1.5 \leq \Delta Vs < 4$	=> standard purification
$4 \leq \Delta Vs < 10$	=> easy purification

For the same Δk the separation is not the same as a function of the numerical value of k, Interchim® algorithms within the puriFlash® instrument give automatically the greater elution gradient program for each column from their V_0.

Method transfer from TLC's to Purification

Normal Phase Column Section Guide, loading chart based on 50µm irregular silica (worst case)

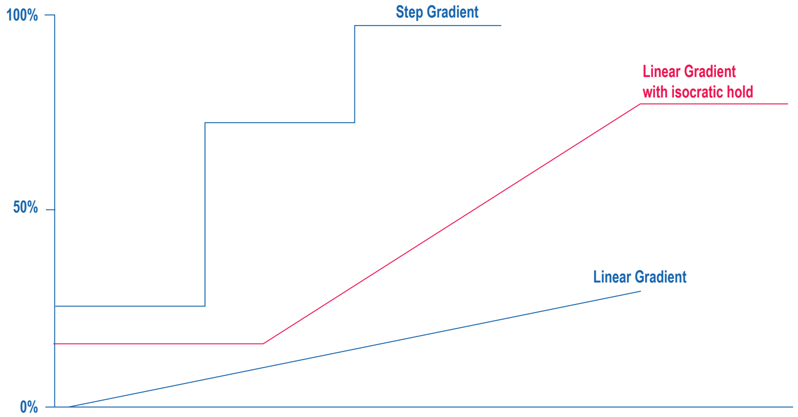


Average values for compounds < 800 MW
These data depend on the conditions of elution and the products to be purified.

Method transfer from TLC's to Purification

How to choose the right Gradient conditions in function of ΔVs.

3 different modes can be considered => Isocratic, Linear Gradient, Step Gradient
plus a combination of Linear Gradient/Isocratic



Isocratic mode:
The mobile phase has the same composition over the entire purification run.
Using an isocratic mode, TLC and flash operational conditions are directly correlated.

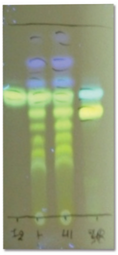
This mode is mainly used to purify compounds with Rf > 0.15 and ΔVs > 1. Compounds with Rf < 0.15 will be elute the latest with broad peaks.

Method transfer from TLC's to Purification

Example of Isocratic purification

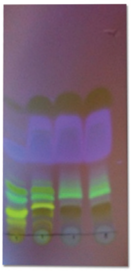
1) TLC development:

Eluent :
50 Cyclohexan / 50 DCM



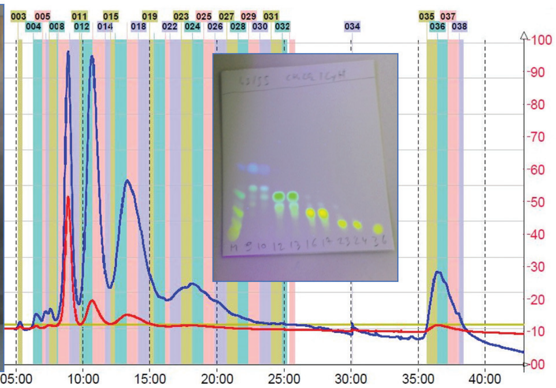
Optimization of TLC conditions
to get Rf between 0.05 & 0.35

Eluent : 55 Cyclohexan / 45 DCM



2) Choice of the column:
Crude sample : 800mg
(mixture of 8 compounds)
Column : PF-15SIHC/120g
Loading capacity: 0.6%

3) Flash condition:
Injection mode: Solid deposit with celite
Eluent : 55 Cyclohexan / 45 DCM
Flow rate : 60mL/min
254nm (red signal) + Scan : 230-450nm
(blue signal)
P= 12bar



Method transfer from TLC's to Purification

How to choose the right Gradient conditions in function of ΔVs.

Gradient mode (Step, Linear, Linear with isocratic hold):
This mode improves the peak smoothness compared to the isocratic mode and reduces the total analysis time, which makes possible to reduce the volumes of collection & the consumption of solvents.
The initial conditions of a gradient mode are deduced from the isocratic conditions found in TLC.
The % of initial strong solvent is a function of the chromatographic mode of the TLC (normal or reverse phase) and its value is to be determined according to the eluent force curves of the solvents used. The slope of the gradient plays a fundamental role, during the transposition, on the quality of separation (ΔVs or Δk).

An adapted slope will, theoretically, lead to improved separation with better selectivity, resolution, purity & loading capacity.

The CV calculated on the TLC isocratic is different with gradient elution mode on flash column. During the purification, the solvent strength increases so compounds are eluted rather with a Rf lower than predicted in isocratic TLC. By this mode, compounds with long retention times will come out earlier increasing the productivity.

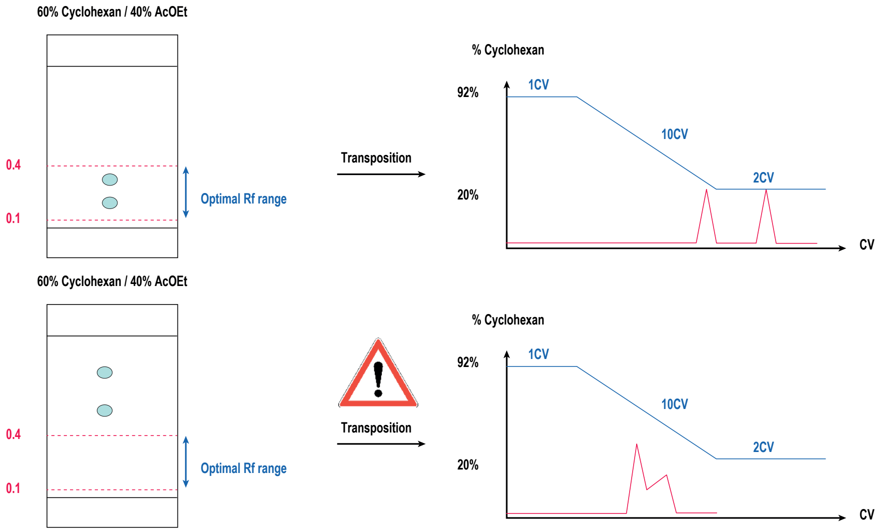
Linear Gradient + Isocratic hold:
This is the most gradient mode used in flash purification. The linear part of the gradient is the fastest way to separate complex mixture.

Method transfer from TLC's to Purification

Method #1 if ΔVs > 1

segment 1 :1/5 of the strong solvent of the TLC over 1V0
segment 2: from segment & over 10V0, reach 2x % of the strong solvent
segment 3: keep isocratic condition over 2V0

Example:



Method transfer from TLC's to Purification

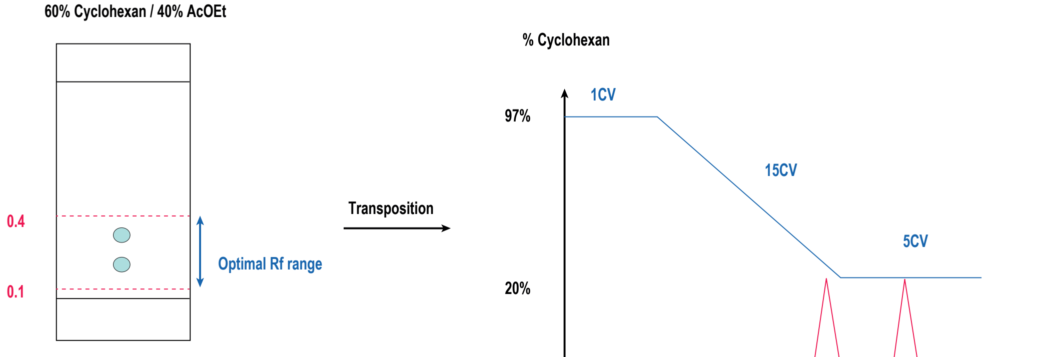
Method #2 if 0.5 < ΔVs ≤ 1

segment 1: 3% of strong solvent over 1V0

segment 2 : from segment & over 20V0, reach 2x % of the strong solvent

segment 3: keep isocratic condition over 5V0

Example:



Method transfer from TLC's to Purification

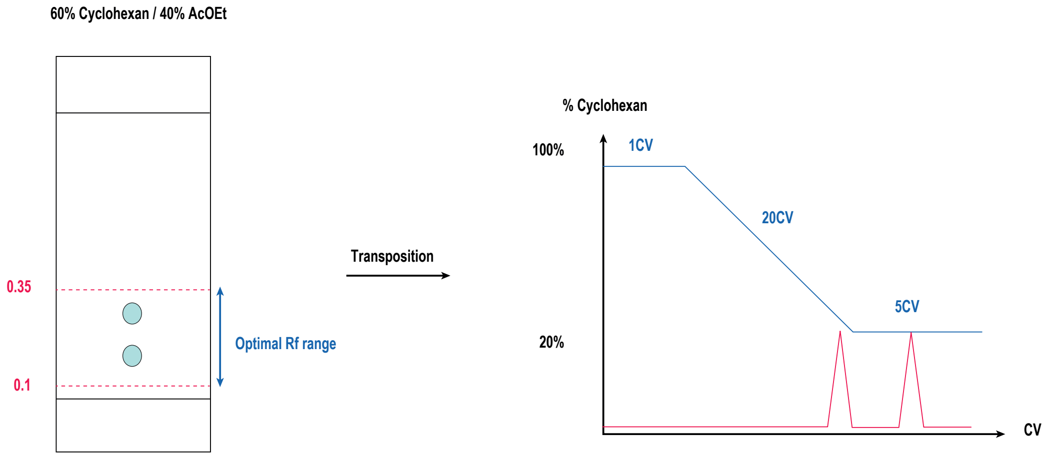
Method #3 if ΔVs < 0.5

segment 1: 100% of weak solvent over 1V0

segment 2 : from segment & over 25V0, reach 2x % of the strong solvent

segment 3: keep isocratic condition over 5V0

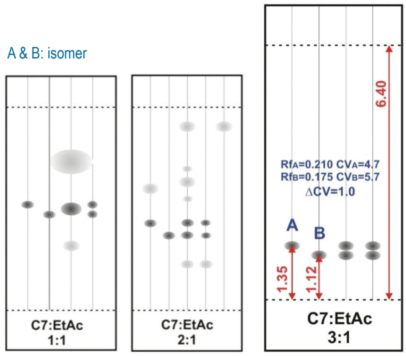
Example:



Method transfer from TLC's to Purification, Application example

1) TLC Development

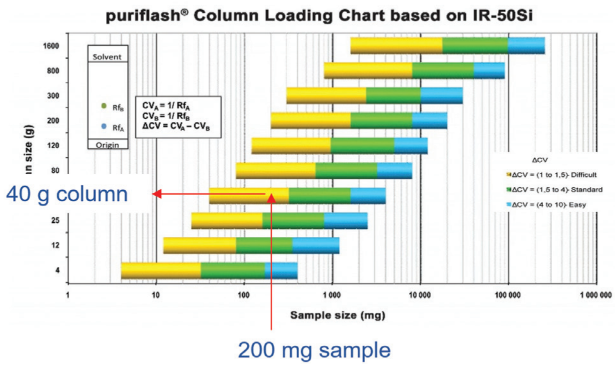
A & B: isomer



C7: Cyclohexane
EtOAc: Ethyl Acetate

2) Selection of column according to ΔCV mass of raw sample: 200mg

We choose to stack 2 columns PF-15SIHP-F0025 to increase the height of the silica bed in order to obtain a better efficiency / separation rather than use a single column PF-15SIHP-F0040.



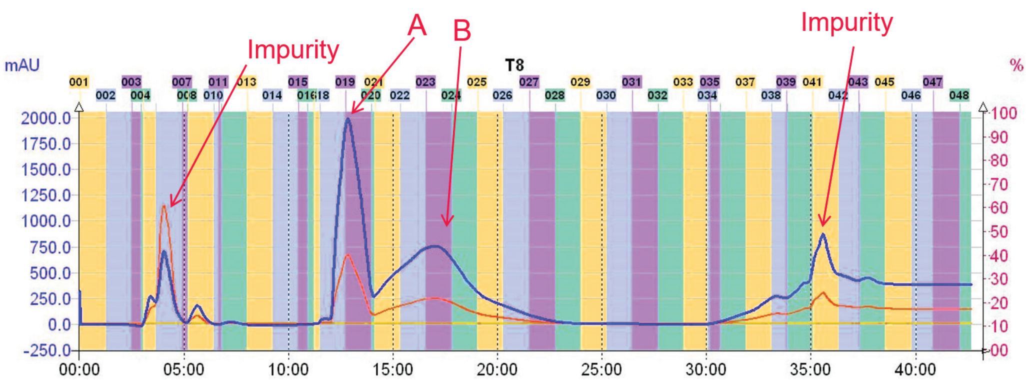
Method transfer from TLC's to Purification, Application example

3) Flash condition on puriFlash® 450

Solvents: A-Cyclohexane, B-Ethyl Acetate
Column: 2 x PF-15SIHP/25G
Flow rate: 20mL / min
Mode of injection: LiquidMass of crude sample: 200mg
UV detector: 232nm + Scan 220-600nm

Elution Gradient:

t (min)	%A	%B
0	80	20
26	80	20
32	50	50
42	50	50



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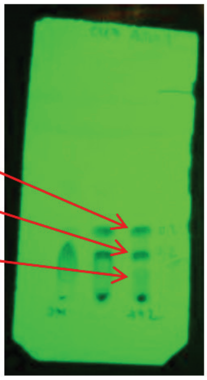
Method transfer from TLC's to Purification, Application example

A) Cyclohexan 70%, B) AcOEt 30%
A and B: isomers

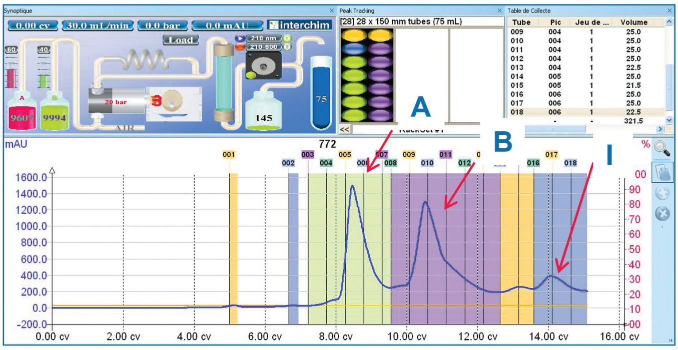


Rf_A= 0.3

Rf_B= 0.2

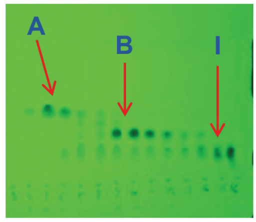
Rf_I= 0.15

$\Delta CV_{B\text{-}A}$= 1.7



CV	%A	%B
0	100	0
5	80	20
10	70	30
14.25	40	60
15.08	5	95

Flash Condition on puriFlash® 450
Solid deposit (Dry-load 4g)
Column: PF-15SIHP/40G
M inj = 1g of crude sample
Flow rate: 30mL/min
UV: 254nm + Scan 210-600nm
Solvent: A-Cyclohexan, B-AcOEt
P = 6 bar



Method transfer from TLC's to Purification

Calculation of the essential analytical & preparative column parameters = >

a) Dead volume $V_0 = \pi(D^2/4) \times L \times \varepsilon$ - (ε: total column porosity, usually between 0.6 to 0.8)

b) Dead time $T_0 = V_0$ /opt.F - (opt.F: Optimum flow rate depends on particle size and column I.D.)

Experimental method using Uracil a non retain compound or $NaNO_3$ can be use for the determination of T_0.

250 x 4.6mm
V_0 = 2.90mL
opt.F = 0.75mL/min
T_0 = 3.87min

250 x 10.0mm
V_0 = 13.70mL
opt.F = 3.50mL/min
T_0 = 3.87min

250 x 21.2mm
V_0 = 61.70mL
opt.F = 16.00mL/min
T_0 = 3.87min

250 x 30.0mm
V_0 = 123.60mL
opt.F = 32.00mL/min
T_0 = 3.87 min

250 x 50.8mm
V_0 = 354.50mL
opt.F = 92.00mL/min
T_0 = 3.87min

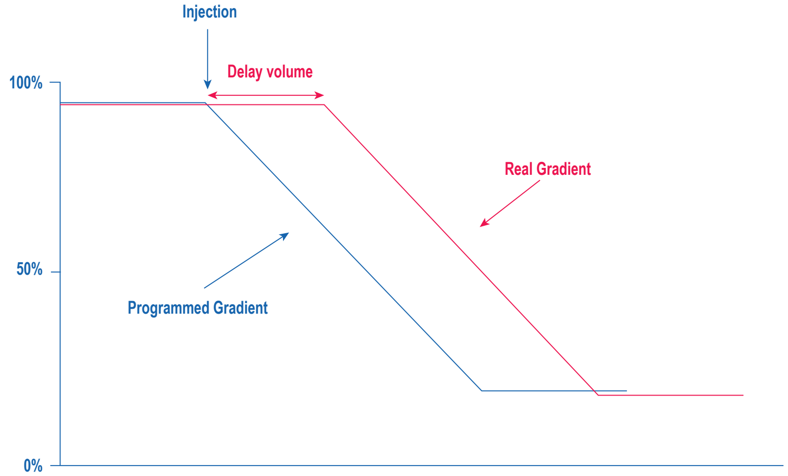
Method transfer from HPLC's to Purification

Calculation of the essential system parameters = >

a) Delay volume

The delay volume is the time required for a change in the gradient to reach the column inlet.

Each instrument has its own delay volume. It can affect the results of the separation especially in terms of selectivity. It is crucial to know its value to achieve an efficient method transfer. Usually for a preparative system delay volume is > 10mL.



Method transfer from HPLC's to Purification

Calculation of the essential system parameters = >

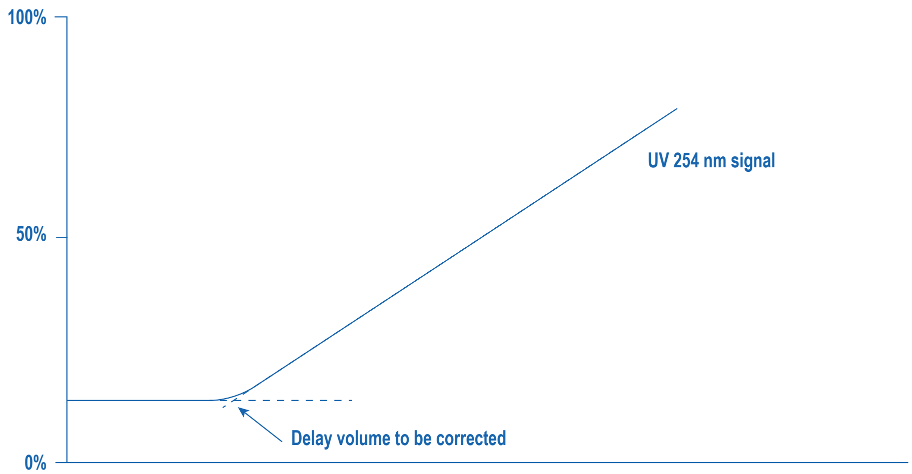
a) Experimental measurement of the dead volume for an instrument

replace the column by an union

program a 0-100% B gradient in ~10 T_0 using (acetonitrile + 0.1% acetone) in solvent B

work at the flow rate at which subsequent experiments will be done

record the UV signal at 254nm



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Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

First of all, we calculate conditions based on a direct scale-up.
Therefore, it is important between the analytical and preparative mode that :

a) The mobile phase (nature of the organic solvent,% organic solvent, pH, ionic strength, modifiers& temperature) and the stationary phase remain exactly the same.

b) To keep same efficiency N = L / (h x dp) - (L: column length, h: constant (depends on the quality of column filling, mobile phase flow and can also be negatively influenced by large volumes injected), dp: particle diameter). The ratio L /dp must be maintained constant.

c) The linear velocity (u) must be maintained constant so, adjusted according to the diameter of the column. Typically, for a 4.6mm id column at the optimum flow rate of 0.75mL/min the linear velocity is 1.07mm/s. The same linear velocity for a 30.0mm id column is obtained at a flow rate of 32.0mL/min.

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

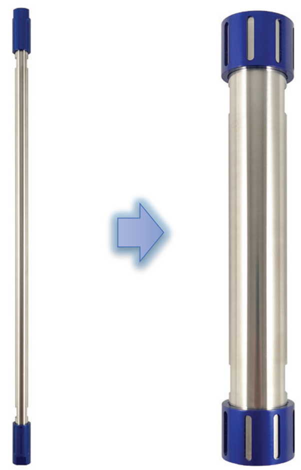
a) Flow rate (F)

It must be adjusted by keeping the linear velocity constant between the analytical and the transferred preparative method, taking into account the particle size and the geometry of the column.

$$F_{prep} = F_{ana} \times \left(\frac{id^2{}_{prep}}{id^2{}_{ana}}\right) \times \left(\frac{d_{p\ ana}}{d_{p\ prep}}\right)$$

Example:

$$F_{prep} = 0.75 \times \left(\frac{30.0^2}{4.6^2}\right) \times \left(\frac{5}{15}\right) = 11.0\text{mL/min}$$



5µm, 250 x 4.6mm
opt.F = 0.75mL/min

15µm, 250 x 30.0mm
F = 11.0mL/min

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

a) Injected volume (V)

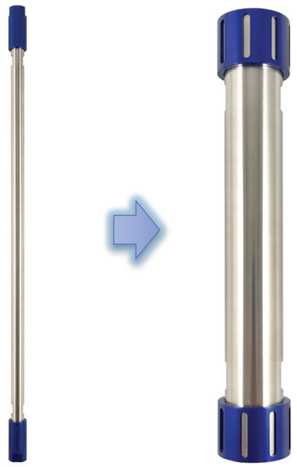
It must be adapted according to the volume of the phases to obtain the same chromatographic efficiencies.

The injected volumes are usually higher than those at the analytical scale to increase the loading capacity. Under overloading conditions, asymmetric peaks and a change in retention time are observed.

$$V_{prep} = V_{ana} \times \left(\frac{id^2_{prep}}{id^2_{ana}}\right) \times \left(\frac{L_{prep}}{L_{ana}}\right)$$

Example:

$$V_{prep} = 5 \times \left(\frac{30.0^2}{4.6^2}\right) \times \left(\frac{250}{250}\right) = 213\mu L$$



5µm, 250 x 4.6mm
V_{inj} = 5µL

15µm, 250 x 30.0mm
V_{inj} = 213µL

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

a) Gradient conditions, isocratic step

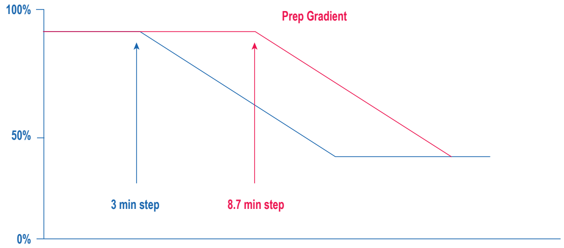
It is necessary to keep the ratio isocratic time / dead time of the column constant in analytic / preparative to keep a number of percolated column volumes equivalent.

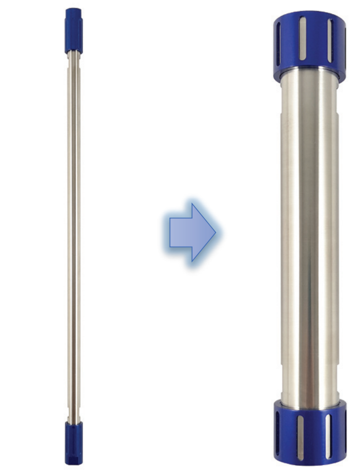
$$T_{prep} = T_{ana} \times \left(\frac{id^2_{prep}}{id^2_{ana}}\right) \times \left(\frac{L_{prep}}{L_{ana}}\right) \times \left(\frac{F_{ana}}{F_{prep}}\right)$$

T = time of the isocratic step

Example:

$$T_{prep} = 3 \times \left(\frac{30.0^2}{4.6^2}\right) \times \left(\frac{250}{250}\right) \times \left(\frac{0.75}{11}\right) = 11.0mL/min$$





5µm, 250 x 4.6mm
opt.F = 0.75mL/min

15µm, 250 x 30.0mm
F = 11.0mL/min

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

d) Gradient conditions, gradient slope

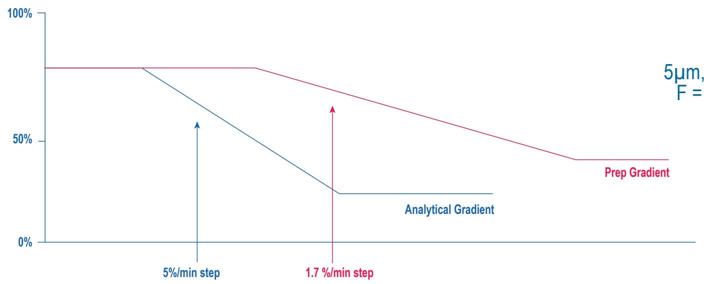
The initial and final compositions must remain the same during the transfer.
The new gradient slope is calculated by keeping the product (slope x dead time) constant to keep the number of column volumes constant.

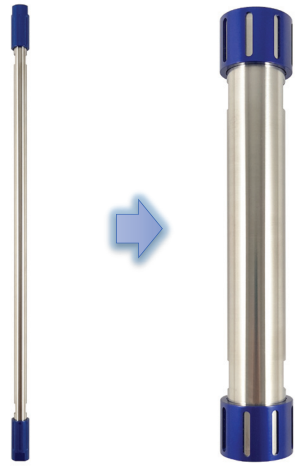
$$S_{prep} = S_{ana} \times \left(\frac{id^2_{ana}}{id^2_{prep}}\right) \times \left(\frac{L_{ana}}{L_{prep}}\right) \times \left(\frac{F_{prep}}{F_{ana}}\right)$$

S = slope of the gradient

Example:

$$S_{prep} = 5\%/min \times \left(\frac{4.6^2}{30.0^2}\right) \times \left(\frac{250}{250}\right) \times \left(\frac{11}{0.75}\right) = 1.7\%/min$$





5µm, 250 x 4.6mm
F = 0.75mL/min

15µm, 250 x 30.0mm
F = 11.0mL/min

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

e) Gradient conditions, gradient slope

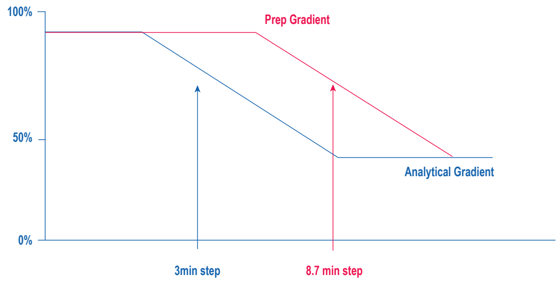
The initial and final compositions must remain the same during the transfer.
The new gradient slope is calculated by keeping the product (slope x dead time) constant to keep the number of column volumes constant.

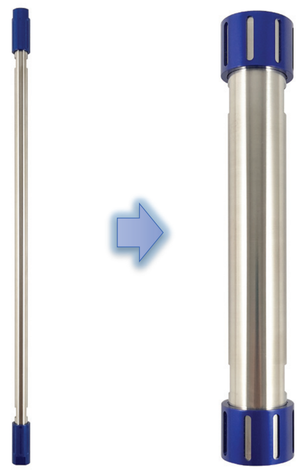
$$S_{prep} = S_{ana} \times \left(\frac{id^2_{ana}}{id^2_{prep}}\right) \times \left(\frac{L_{ana}}{L_{prep}}\right) \times \left(\frac{F_{prep}}{F_{ana}}\right)$$

S = slope of the gradient

Example:

$$S_{prep} = 5\%/min \times \left(\frac{4.6^2}{30.0^2}\right) \times \left(\frac{250}{250}\right) \times \left(\frac{11}{0.75}\right) = 8.7\%/min$$





5µm, 250 x 4.6 mm
F = 0.75mL/min

15µm, 250 x 30.0mm
F = 11.0mL/min

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

f) Gradient conditions, gradient slope time

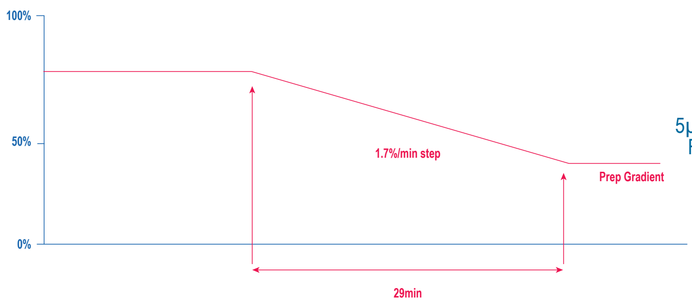
The initial and final compositions must remain the same during the transfer.
The new gradient slope is calculated by keeping the product
(slope x dead time) constant to keep the number of column volumes constant.

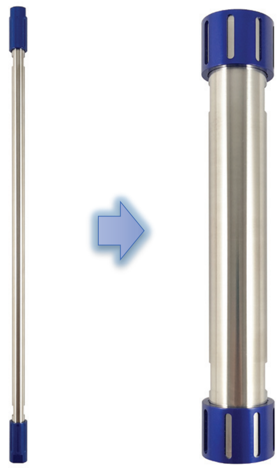
$$T_{prep} = \left(\frac{\%B\ final_{ana} - \%B\ final_{ana}}{S_{prep}} \right)$$

T = time of the gradient slope

Example:

$$T_{prep} = \left(\frac{75 - 25}{1.7} \right) = 29min$$





5µm, 250 x 4.6mm
F = 0.75mL/min

15µm, 250 x 30.0mm
F = 11.0mL/min

Method transfer from HPLC's to Purification

Calculation of the preparative conditions = >

g) Gradient conditions, additional comments

#The column reconditioning step generally consists of a rapid return to initial conditions and stabilization for about 5 to 10 column volumes.

#The delay volume creates an isocratic step at the beginning of the analytical and preparative gradient. The ratio between the delay time (Td) and the dead time of the column (T0) must remain constant, same number of percolated column volumes during the delay time. To compensate for the differences of Td and T0 it is recommended to reduce an existing isocratic plateau or to add an additional isocratic step.

#The analysis time is proportional to the dead time of the column.
The pressure is inversely proportional to dp3 and to the length of the column.
The solvent consumption is proportional to the internal diameter and the length of the column.

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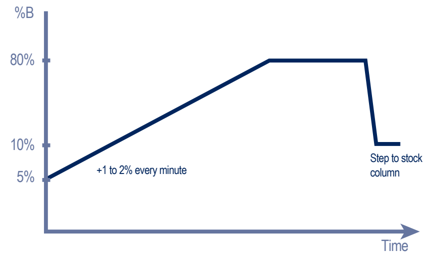
Reverse Phase mode

Interactions between stationary phase and hydrophobic parts of the peptide. Use C18 (-N or -T) or C8-N column according to polarity and length of the peptides.

Solvents are often Water+ACN+0.1%TFA (to modify selectivity, it's also possible to use methanol, and isopropanol for hydrophobic peptides).

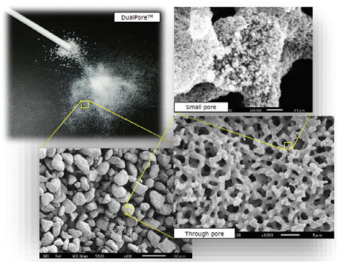
Typical process: Increase % of organic solvent of 1 - 2% every minute. To increase the resolution, a second isocratic step can be done when the interest peptide is eluted.

Optimization parameters: Temperature, isocratic gradient, change of media (C8, PhC4, C4), porosity (100, 200, 300Å), modify pH.



Benefit of Interchim® peptides monolith

Monolith is C18 bounded, and can be used as a conventional Reverse Phase.
- Selectivity is comparable to conventional silica
- Works for small and large molecules
- Lower generation of back pressure, allow to use high viscosity solvent like isopropanol
- Provide high resolution, 30µm DualPoreTM columns provide comparable resolution than 15µm conventional silica
- Can work at higher flow rate and save until 80% time => Ultra High throughput



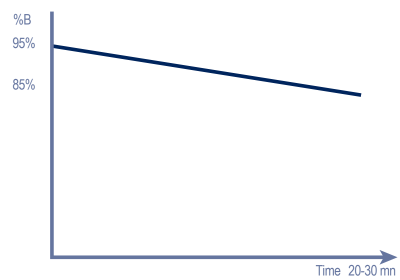
HILIC mode

Used for the separation of highly polar peptides. Use C18-N or C8-N columns according to length of the peptides.

Solvents are the same than RP mode, and in this case, water is the strong solvent.

Typical process: Start method with 95% of organic solvent to 85% in few minutes.

Optimization parameters: temperature, isocratic step, change of media (C8, PhC4, C4), porosity (100,200,300Å) modify pH.



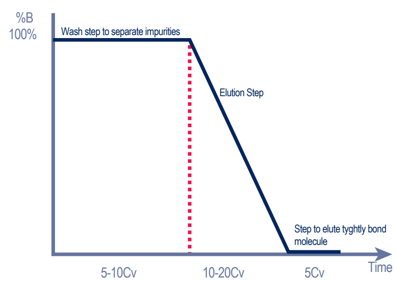
HIC mode

Hydrophobic interactions between solutes and a stationary phase with low or medium hydrophobicity. The separation is based on the reversible interaction between a peptide and the hydrophobic surface of a chromatographic media. Use 45-RP column.

Solvents are often a solution of Na_2HPO_4+ 1-4M of antichaotropic salt (Ammonium sulfate, NaCl, Na_2SO_4…).

Typical process: Start with buffer solution of 1.5-4M (Na_2HPO_4) + ammonium sulfate, and decrease the concentration of ammonium sulfate.

Optimization parameters: Salt concentration, try other salts, modify pH, test other columns (C8, C4…).



See all stationary phases for peptides method development & purification from page C.28

Dry-Load Injection

Dry-Load Injection

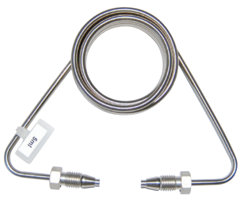
The dry-load injection is a convenient technic when the polarity of the reactional mix (or the extract) to purify is close to the polarity of stationary phase or, when it contains solutes with extreme opposite polarity.
It should also be consider when:

- the compound of interest is a lot more retained than the other compounds we would like to separate.
- the sample contains one or several compounds having low solubility with the eluent.

Compare to liquid injection, the dry-load injection improves the efficiency, the resolution, and the final purity.

Sample in solution

Injection Loop



Limited injection volume
due to sample solubility

Solid Sample

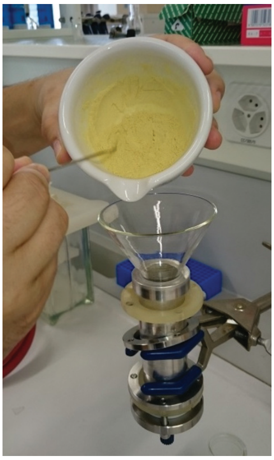
Dry injection

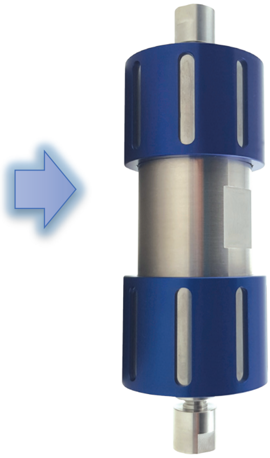
Allow to large sample amounts

High pressure dry-load

How to prepare the Dry-load cell for injection





1. Adsorb the dissolved sample in a "better solvent" on a small amount of stationary phase (Silica, C18 or Celite).
2. Evaporate the deposit solvent with a rotary evaporator until a "dry" powder is obtained. (If the volume of the dissolved sample is small, it can be poured onto the silica, and the partially impregnated silica mixed up to obtain a homogeneous dry powder, thus avoiding the passage to the rotary evaporator)
4. Place the mixture over the inlet frit of the column, once it has possibly been equilibrated with the elution solvent.
5. Add a sintered frit over the mixture, then a closure system or the piston of the column (for equipped systems) and tamp the mixture slightly to obtain a perfectly homogeneous deposit thickness.
6. Proceed with elution.

Technical tips

The volume of the dry-load must not exeed 5% to 10% of the purification column volume to keep sufficient resolution between fractions.

If possible, wet the dry-load with 100% of the less eluent solvent before to start the purification run.

Caution : Adapt your step in function of the back pressure and the acceptable flow rate.

The dry-load can generate air bubbles creating disruptions that hide the first peaks. (UV detector)

Celite exhibit advantages:

It does not generate back pressure due to its large particle size
It does not interact with the compounds that arrive at the same time at the top of the column
It improves separation and are compatible with both NP and RP mode

Liquid Injection

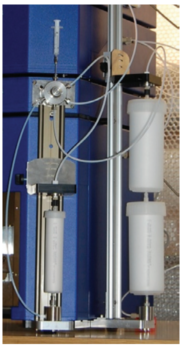
Liquid injection

This technique permit to dissolve the crude sample in minimum solvent to prevent peak broadening (dispersion phenomenon). The solvent which have the least affinity with the crude sample must be used (Ex: Cyclohexane for normal phase purification and water for reversed phase purification).
If you do a liquid injection, check that the sample is soluble at the starting condition of the run otherwise a cristalization can occure. A strong dissolving solvent impact the resolution. To avoid the lost of resolution, Interchim® advise to dissolve the crude sample at the starting condition of the run.

The dissolving solvents have an impact on the quality of the purification. The dispersion of the crude sample by the dissolving solvent decrease the peak resolution. The volume of the dissolving solvent must be less than 5% of the column volume to conserve the resolution.

Different injection modes

Direct injection on column head



Injection with an automatic valve

Injection pump

Autosampler

- Injection on a dry column without previous equilibration.
- Injection on a pre-conditioned column. This method gives the best results, because the column absobent offers a regular flow, and the sample follows exactly the flow of the solvent in the column. This injection mode allows the purification of the compounds with high Rf values: Rf<0.7. You can work directly with the optimum flow rate.
- Direct injection on column head: the use of a Luer-Rock connector at the entrance of the column allows to use a syringe and inject rapidly the sample, without any cross contamination risk or product loss.
- Injection through an external pump for a greater volume.
- Injection through an autosampler to automat purifications.
- Injection with an automatic valve: this method improves the reproducibility of the injections, increases productivity and is less time consuming.

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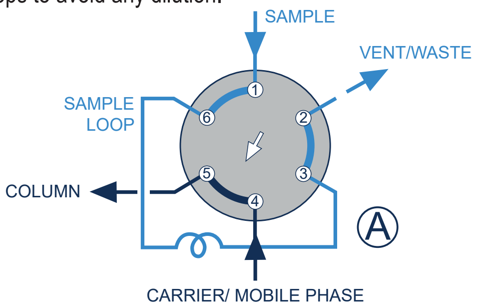
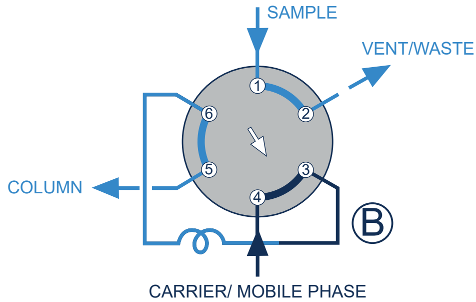
Injection with a 6-way 2 positions automatic valve

With the valve in position A, the sample is loading into the loop from the injection port while the mobile phase flows directly through to the column. When the valve is switched to position B, the sample contained in the sample loop is displaced by the mobile phase and is carried onto the column. The flow direction of the mobile phase through the loop is opposite to the flow direction during the loading. This is espacially critical for partially-filled loops to avoid any dilution.



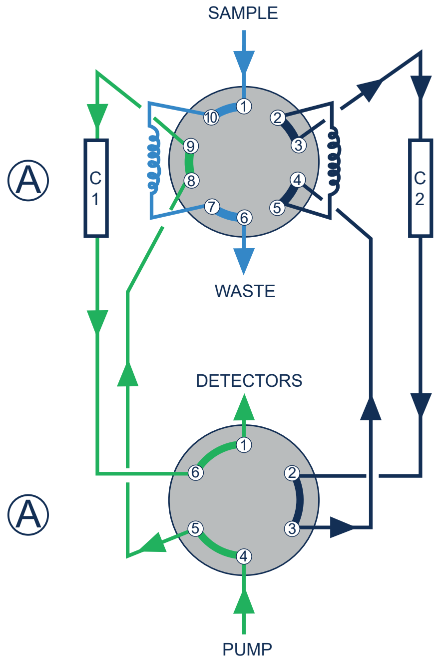


Injection with a 10-way 2 positions automatic valve on 2 different columns

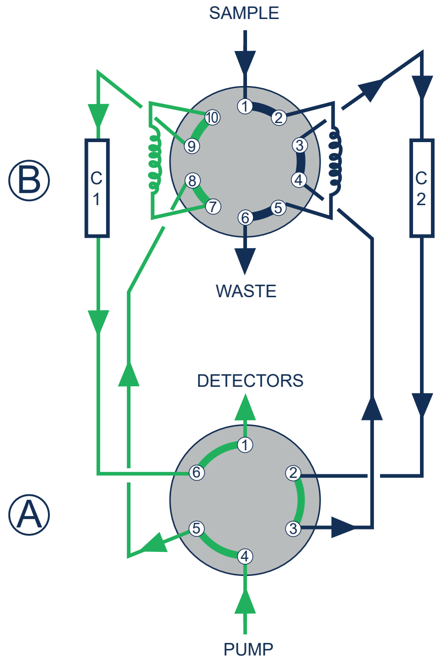
With this coupling of two valves, each of the two column is linked to is own loop.

When the Valve 1 is in position A and valve 2 in position A the the sample is loading into the loop 1 from the injection port while the mobile phase flows directly through to the column 1.

After the column equilibration the valve 2 switch in position B. The sample contained in the sample loop 1 is displaced by the mobile phase and is carried onto the column 1.



Equilibration column 1
Loading sample loop 1

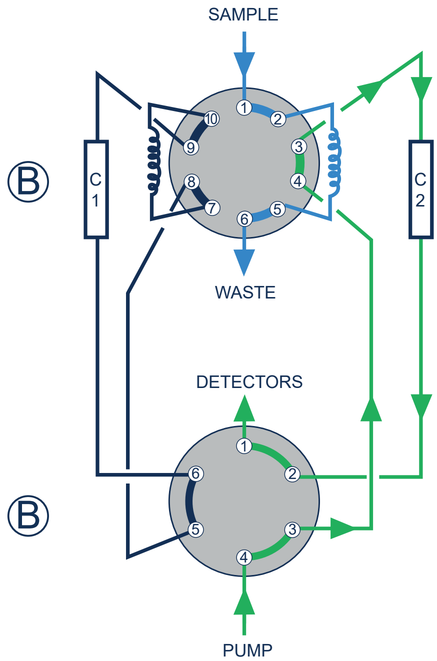


Inject sample column 1

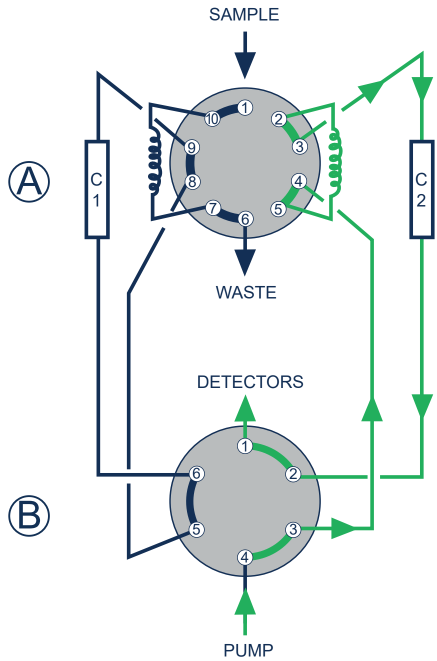
Injection with a 10-way 2 positions automatic valve on 2 different columns

At the opposite, when the Valve 1 is in position B and valve 2 in position B the the sample is loaded into the loop 2 from the injection port while the mobile phase flows directly through the column 2.

After the column equilibration the valve 2 toggles in position A. The sample contained in the sample loop 2 is displaced by the mobile phase and is carried onto the column 2.



Equilibration column 2
Loading sample loop 2

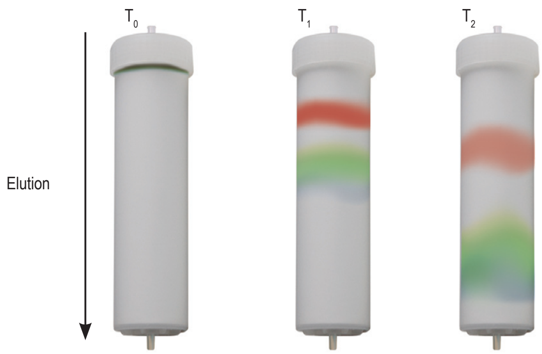


Inject sample column 2

Method Development & Optimization
Injection methods in Flash purification - Examples

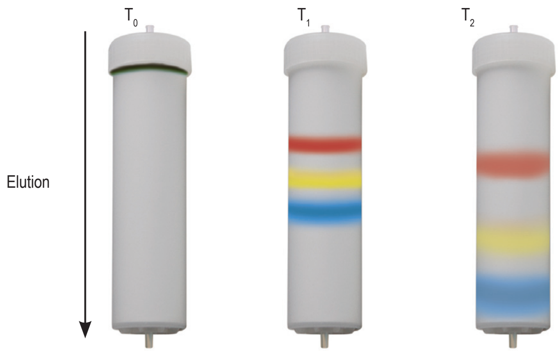
Injection example 1: Liquid deposit

Liquid deposit on dry columns
Starting condition too eluent (20% strong solvent)



Poor separation

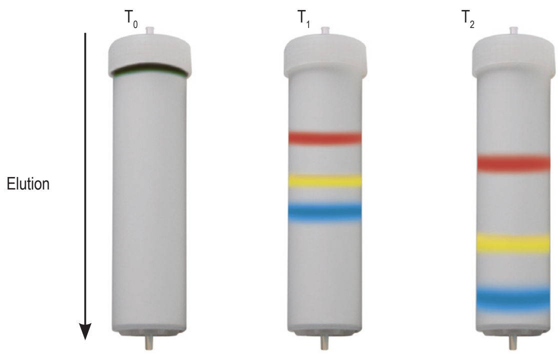
Liquid deposit on pre conditioned columns with the same starting eluent condition



Correct separation

Injection example 2: Liquid injection

Liquid injection with syringe on pre-conditionned column (same starting eluent condition than example 1)

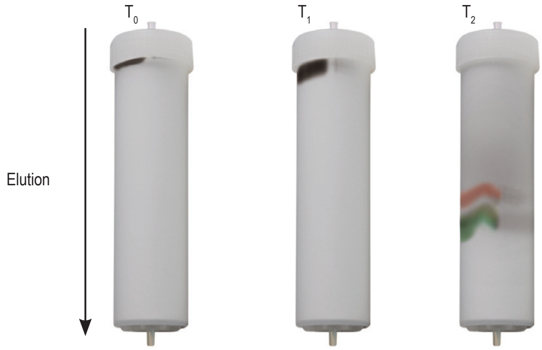


Best separation

Back to SUMMARY

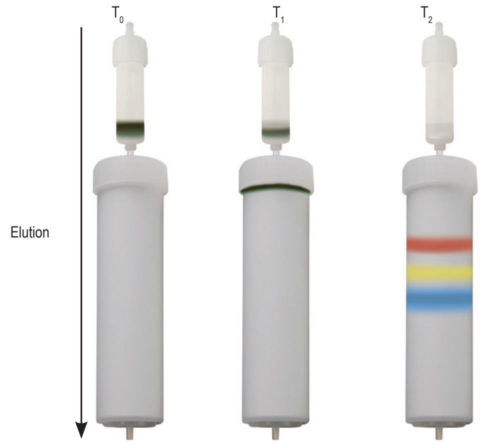
Injection example 3: Liquid injection on dry column

System not cleaned with starting eluent condition

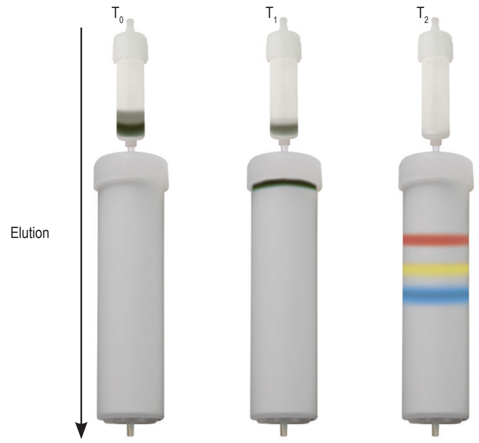


Injection example 4: Dry-load injection on pre-conditionned column

Dry-load equilibration with 20% of strong solvent



Dry-load equilibration with 100% of weak solvent



Best separation

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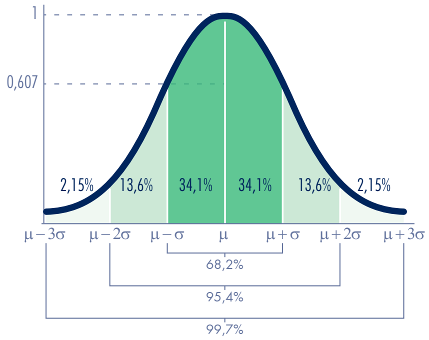
Peak shape

A peak can be assimilated to a Laplace Gauss curve with different amounts of species (percentage of the surface) according to the standard deviation of this function.



As the goal is a clear separation of different molecules we can easily guess that the more the peaks are separated the more the compounds are pure.

μ : average value

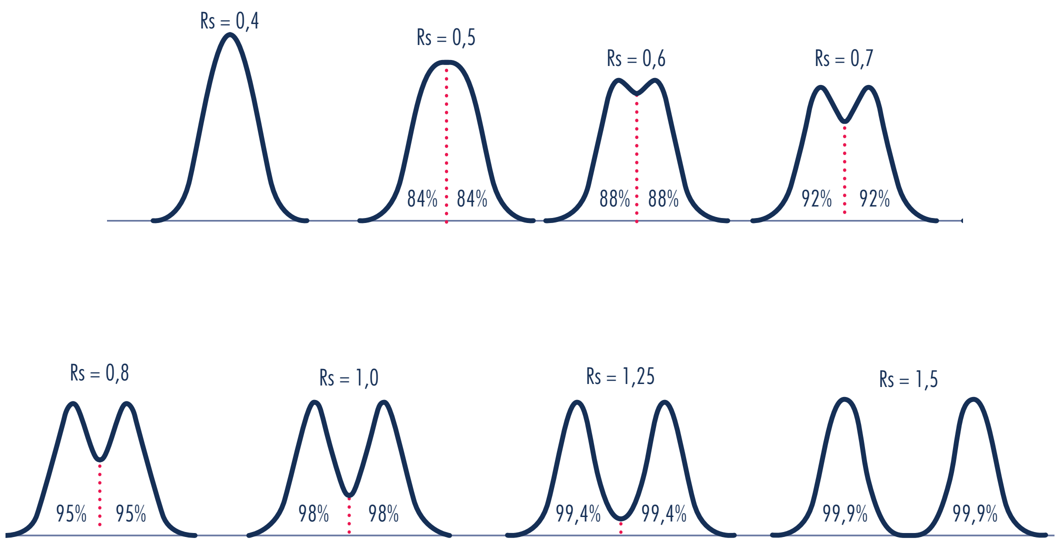
σ : standard deviation

Peak separation

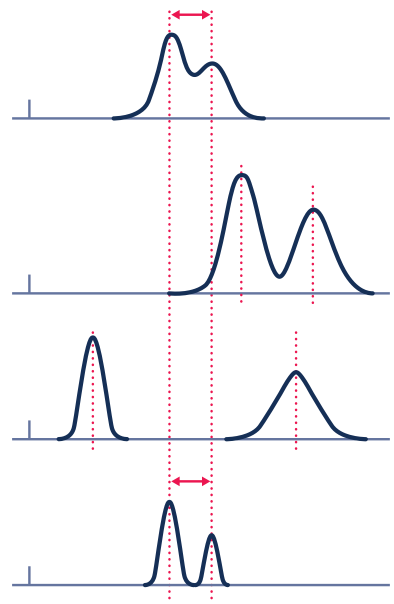
In that way, some parameters must be enhanced to reach the best compromize between elution time (quantity of solvent) and separation (resolution).

These parameters interact to lead to a measurable separation in terms of resolution Rs.

Different resolution values correlated to the peaks separation.



Peak separation



Separation estimated by selectivity α (LC) or ΔR_f (TLC)

High diameter of particles
Overlapped peaks
How to improve ?

- Decrease solvent strenght to increase retention time
- Use more packing material (size of the column)
- Try a new packing material

- Improve selectivity by suitable choice of conditions (gradient, proportion or nature of solvents).

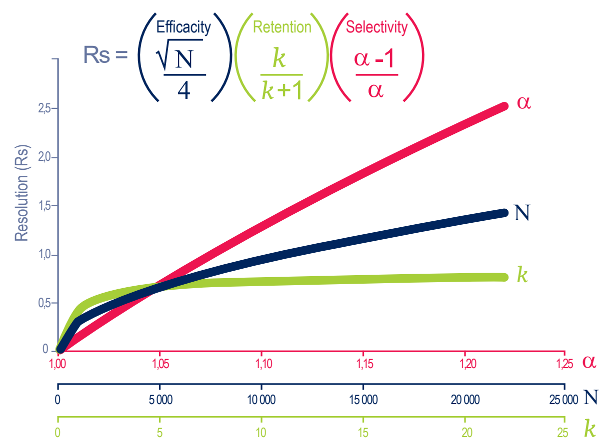
- Increase efficiency (plate number N) (smaller column-packing particles)

Separation parameters

The 3 main parameters ruling the chromatographic technic are:

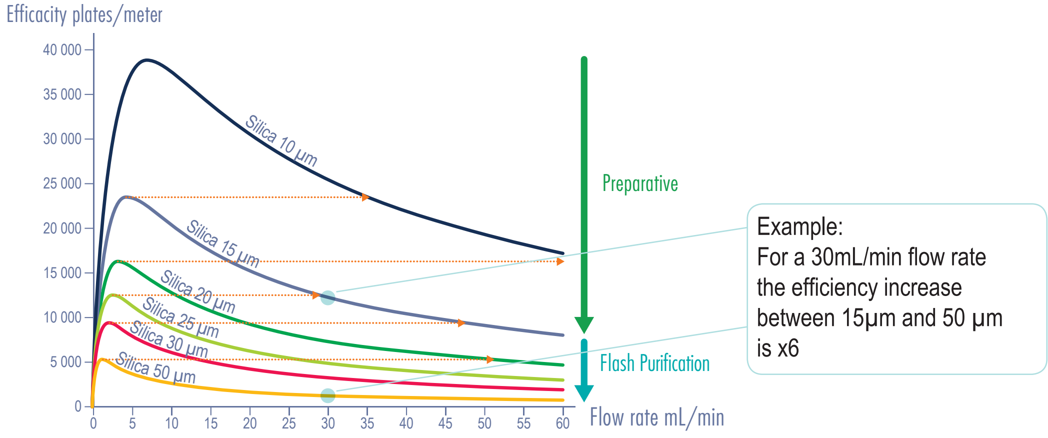
Efficiency (plates number) : **N**
Retention factor : **k**
Selectivity : **α**

Their influence on resolution is shown in the side diagram.



Efficiency (N) influence

The efficiency parameter (N) is usually the first one that many operators want to change. But we must take into account that only the square root of this value influences the resolution.
However, as shown in the diagram, smaller particles allow to strongly impact the resolution.



Efficiency (N) influence: Example

The application below is highlighting the benefit of smaller particle sizes in terms of resolution and cost of purification. High efficiency (N) is giving better separation and allows a huger charge of crude sample.

PF-15SIHP vs IR-50SI columns

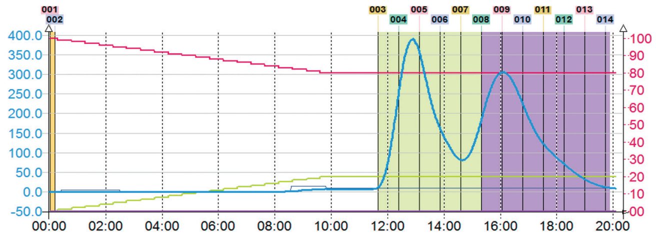
The Ultra Performance Flash Purification (UPFP) concept achieve accelerating the throughput by reducing the time and cost per sample of the purification process with increased confidence. What differentiates UPFP from Flash purification is the combination of advanced machine technology, built to last and mastery of small particles spherical silica puriFlash® columns which offers significant benefits over the traditional flash grade silica.

Conditions:
Device: puriFlash® 450
Solvents: A-Cyclohexane, B-Ethyl acetate
Injection Mode: Liquid injection
Crude sample mixture: 400mg of each Phthalate
Injection volume: 3.2mL
UV Detection: 254nm
Eluent conditions:

IR-50SI-F0080

Step	CV	Time	%A	%B
1	0	0	100	0
2	3.28	09:50	80	20
3	5.63	16:51	80	20

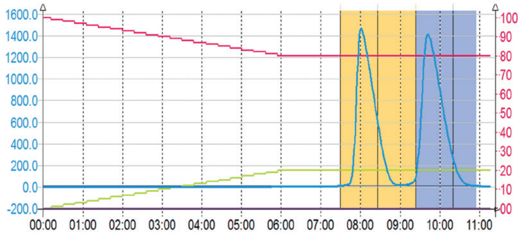
Loading capacity: 1%



PF-15SIHP-F0040

Step	CV	Time	%A	%B
1	0	0	100	0
2	3.28	06:03	80	20
3	5.63	10:21	80	20

Loading capacity: 2%



Purification cost PF-15SIHP vs IR-50SI columns

Flash column	IR-50SI	PF-15SIHP
Qty of silica per column	80g	40g
Silica Ratio		50% less
Flow rate	34mL/min	26mL/min
Cyclohexane consumption (equilibration & run time)	1032mL	418mL
Ethyl Acetate consumption (run time)	94mL	40mL
Total volume	**1126mL**	**458mL**
Consumption Ratio		59% less
Total Purification time	**20min**	**11min**
Time Saving		45%
Labor time: Edit method	5min	5min
Labor time: Analysis & Collection of collected fraction	25min	9min
Total Labor time	**30min**	**14min**
Time Improvement		114%
Column Cost (Cat. price)	15.10€	35.17€
Solvent Cost	27.66€	11.24€
Labor Cost	37.50€	17.50€
Waste recycling (Solvent & Column)	0.466€	0.232€
Total Cost of Purification per run	**80.73€**	**64.14€**
Cost Saving		26%

- Cylclohexane 1L price (Cat. price): 25.10€
- Ethyl Acetate 1L price (Cat. price): 18.70€
- Labor cost per hour: 75€
- Solvent recycling without halogen compound (Cat. price): 0,00035€/mL
- Silica columns recycling (Cat. price): 0,0009€/mL

Conclusion :

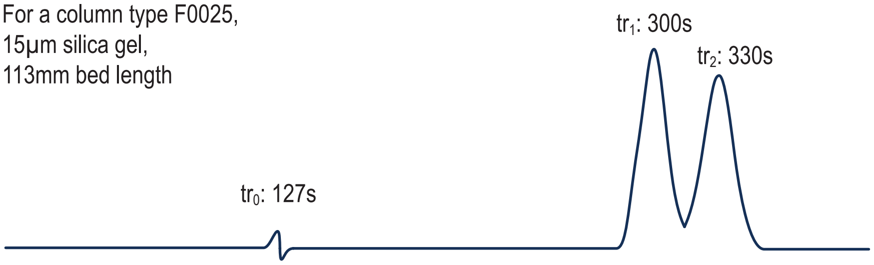
A 15µSIHP-F0040 column gives a better result with greater resolution, efficiency, loading capacity and improved retention versus a IR-50SI column. Using a 15µSIHP, reduce run time by 45%, improve in time for the purification by 114%, reduce the solvent consumption by 59% and improve in cost reduction for the purification by 26%. Lower collection volume means reduced evaporation time.

If the sufficient selectivity is reached, the 15µSIHP allows to achieve greater fraction purity. The best ratio cost/productivity is obtained with 15µm silica.

Selectivity (α) influence

The selectivity (α) is an important parameter, occuring from the interaction of compounds with the stationary and mobile phases. The goal consists to find the best elution conditions leading to retention times farthest from each other.
It is a ratio between the K value of two compounds so directly related to their own retention time. **α = K2/K1**

For a column type F0025,
15µm silica gel,
113mm bed length



α = 1,17

By changing the elution
conditions and keeping
the same column:

α = 1,36

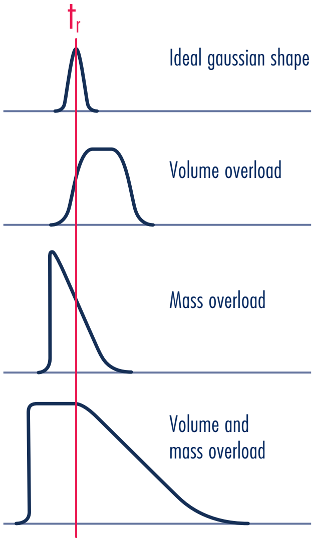
Selectivity (α) increase => x1.16 & Resolution (Rs) increase => x1.82

Retention (k) influence

On the other hand, the retention factor (k) has a real measurable effect up to 5.
After this value, his contribution on resolution is quite weak.
There isn't any advantage to aim very long retention times as they lead to a big collection volume of the compounds.

Loading capacity

The loading capacity of a column has also a great importance on the purification success.
A silica gel or any other adsorbent show a specific surface area, linked to its hability to develop interactions with the compounds.
In order to insure a smooth process of separation, once usually takes care to not exceed the ratio charge/surface. This theorical value can be overtaken but that gives rise to peaks distorsion which reduces the resolution.



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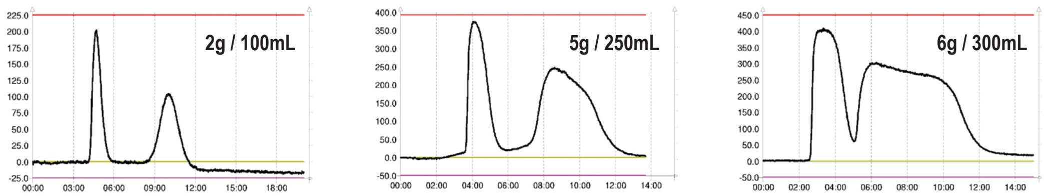
Mass overloading

Commonly, most of users say that a virgin silica gel bears a loading capacity around 10% of its weight. This is obviously less for a bonded one. That must be correlated with :
- the distance between two peaks
- their relative position
- their own surface

Mass over loading example

This example reveals how a column, according to a good resolution, can be loaded with a high amount of sample.
Purification of Guaifenesin enantiomers



Purify 6g under 12min

Flash Conditions :
Device: puriFlash®430
Solvents: 80% Hexane/20% EtOH
Column: CHIRALPAK OD 20µm 250x30mm glass column
Flow rate: 200mL/min
Injection mode: liquid injection by external injection pump
Sample concentration: 20g/L
Injection volume: 100mL (2g); 250mL (5g); 300mL (6g)
UV Detection

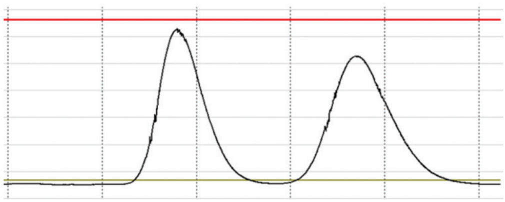
Volume overloading

In any case it is necessary to take into account the injected volume which creates a significant distortion of the peaks beyond **10% of the pore volume** of the column.
Due to these parameters the loading amount will vary widely.
This rule is valide for liquid and dry-load injection modes.

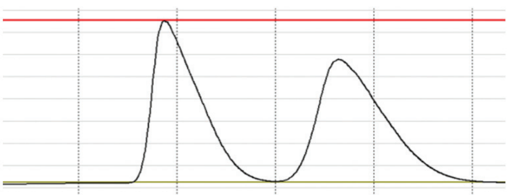
The following applications reveal the influence of the volume overloading.

Volume overloading example

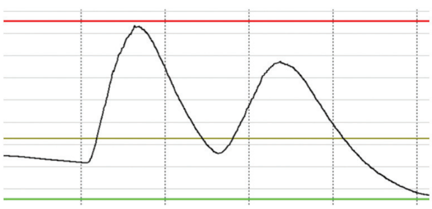
Liquid injection concentration 91mg/mL



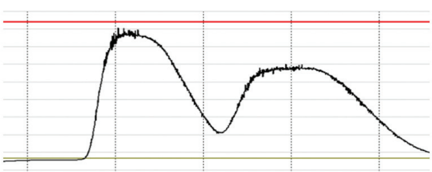
Injection volume: 0.7mL



Injection volume: 1.6mL

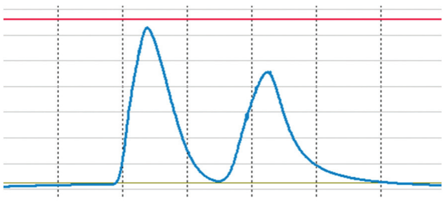


Injection volume: 2.3mL

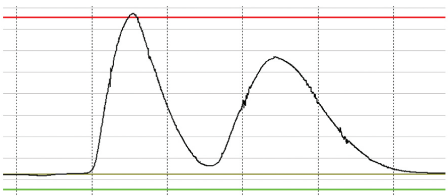


Injection volume: 3.3mL

Dry-Load injection 4G packed with Celite®



Injection on conditioned Dry-Load
Crude sample: 300mg



Injection on unconditioned Dry-Load
Crude sample: 300mg

Silica gel 50µm column
TLC elution: Heptane / Ethyl Acetate (95/(5)
Compounds: Methyl Phtalate, Ethyl Phtalate
Gradient elution

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Loading capacity values for virgin silica gel

The below quantities are given as an indication for virgin silica gels and may vary depending on the injection method, conditions of elution and the compounds to be purified.

ΔCV or Δk around 7

column type		F0001	F0004	F0012	F0025	F0040	F0080	F0120	F0220	F0330	F0800	F1600
15µm	HP	0.10g	0.45g	1.4g	2.8g	4.5g	9.1g	14g	25g	37g	---	---
	HC	0.11g	0.52g	1.6g	3.2g	5.2g	10.4g	16g	29g	43g	---	---
20µm	IR	0.08g	0.38g	1.1g	2.4g	3.8g	7.6g	11g	21g	31g	---	---
25µm	HC	0.09g	0.40g	1.2g	2.5g	4.0g	8.0g	12g	22g	33g	80.0g	160.0g
30µm	HP	0.07g	0.34g	1.0g	2.1g	3.4g	6.7g	10g	18g	28g	67g	134g
50µm	IR	0.06g	0.29g	0.9g	1.8g	2.9g	5.8g	9g	16g	24g	58g	116g
	HP	0.06g	0.30g	0.9g	1.9g	3.0g	6.0g	9g	17g	25g	60g	120g
	HC	0.07g	0.35g	1.0g	2.2g	3.5g	6.9g	10g	19g	29g	69g	138g

ΔCV or Δk around 5

column type		F0001	F0004	F0012	F0025	F0040	F0080	F0120	F0220	F0330	F0800	F1600
15µm	HP	0.09g	0.42g	1.3g	2.6g	4.2g	8.5g	13g	23g	35g	---	---
	HC	0.10g	0.48g	1.5g	3.0g	4.8g	9.7g	15g	27g	40g	---	---
20µm	IR	0.07g	0.35g	1.0g	2.2g	3.5g	7.0g	10g	19g	29g	---	---
25µm	HC	0.08g	0.36g	1.1g	2.3g	3.6g	7.3g	11g	20g	30g	73g	146g
30µm	HP	0.06g	0.29g	0.9g	1.8g	2.9g	5.7g	9g	16g	24g	57g	114g
50µm	IR	0.04g	0.21g	0.6g	1.3g	2.1g	4.2g	6g	11g	17g	42g	84g
	HP	0.05g	0.22g	0.7g	1.4g	2.2g	4.4g	7g	12g	18g	44g	88g
	HC	0.05g	0.25g	0.7g	1.6g	2.5g	5.0g	7g	14g	21g	50g	100g

ΔCV or Δk around 2

column type		F0001	F0004	F0012	F0025	F0040	F0080	F0120	F0220	F0330	F0800	F1600
15µm	HP	0.04g	0.18g	0.5g	1.1g	1.8g	3.5g	5g	10g	14g	---	---
	HC	0.04g	0.20g	0.6g	1.3g	2.0g	4.0g	6g	11g	17g	---	---
20µm	IR	0.03g	0.14g	0.4g	0.9g	1.4g	2.7g	4.1g	7g	11g	---	---
25µm	HC	0.03g	0.14g	0.4g	0.9g	1.4g	2.9g	4g	8g	12g	29g	58g
30µm	HP	0.02g	0.10g	0.3g	0.6g	1.0g	2.0g	3g	5.5g	8.2g	20g	40g
50µm	IR	0.015g	0.07g	0.20g	0.4g	0.7g	1.3g	2g	3.7g	5.5g	13.5g	27g
	HP	0.015g	0.07g	0.21g	0.4g	0.7g	1.4g	2.1g	3.9g	5.8g	14.0g	28g
	HC	0.017g	0.08g	0.24g	0.5g	0.8g	1.6g	2.4g	4.4g	6.7g	16.0g	32g

IR: Irregular silica gel - Average values for compounds < 800MW
HP: High Performance silica gel - Average values for compounds < 800MW
HC: High Capacity silica gel - Average values for compounds < 500MW

Loading capacity values for virgin silica gel

The below quantities are given as an indication for virgin silica gels and may vary depending on the injection method, conditions of elution and the compounds to be purified.

ΔCV or Δk around 0.8												
column type		F0001	F0004	F0012	F0025	F0040	F0080	F0120	F0220	F0330	F0800	F1600
15µm	HP	0.014g	0.07g	0.20g	0.41g	0.7g	1.3g	2.0g	3.6g	5.5g	---	---
	HC	0.016g	0.08g	0.23g	0.47g	0.8g	1.5g	2.3g	4.2g	6.2g	---	---
20µm	IR	---	0.05g	0.15g	0.30g	0.5g	1.0g	1.5g	2.7g	4.0g	---	---
25µm	HC	---	0.05g	0.16g	0.32g	0.5g	1.0g	1.6g	2.8g	4.3g	10.5g	21.0g
30µm	HP	---	0.04g	0.11g	0.22g	0.4g	0.71g	1.1g	2.0g	2.9g	7.0g	14.0g
50µm	IR	---	---	0.07g	0.15g	0.24g	0.5g	0.7g	1.3g	2.0g	4.8g	9.6g
	HP	---	---	0.08g	0.16g	0.25g	0.5g	0.8g	1.4g	2.1g	5.0g	10.0g
	HC	---	---	0.09g	0.18g	0.29g	0.6g	0.9g	1.6g	2.4g	5.8g	11.6g

ΔCV or Δk around 0.4												
column type		F0001	F0004	F0012	F0025	F0040	F0080	F0120	F0220	F0330	F0800	F1600
15µm	HP	---	0.04g	0.12g	0.25g	0.40g	0.8g	1.2g	2.2g	3.3g	---	---
	HC	---	0.05g	0.14g	0.29g	0.46g	0.9g	1.4g	2.5g	3.8g	---	---
20µm	IR	---	---	0.09g	0.18g	0.29g	0.6g	0.9g	1.6g	2.4g	---	---
25µm	HC	---	---	0.09g	0.19g	0.31g	0.6g	0.9g	1.7g	2.6g	6g	12g
30µm	HP	---	---	0.06g	0.13g	0.21g	0.4g	0.6g	1.2g	1.7g	4.2g	8.5g

IR: Irregular silica gel - Average values for compounds < 800MW
HP: High Performance silica gel - Average values for compounds < 800MW
HC: High Capacity silica gel - Average values for compounds < 500MW

Loading capacity for bonded phases (RP & NP)

Loading capacity for bonded phases as a percentage of the adsorbent mass in the column						
		Δk = 0.4	Δk = 0.8	Δk = 2	Δk = 5	Δk = 7
15µm	60Å < pore size < 120Å	0,12%	0,20%	0,55%	1,30%	1,40%
	200Å < pore size < 300Å	0,06%	0,10%	0,25%	0,65%	0,70%
30µm	60Å < pore size < 120Å	0,07%	0,10%	0,30%	0,90%	1,10%
	200Å < pore size < 300Å	0,03%	0,06%	0,15%	0,45%	0,60%
50µm	60Å < pore size < 120Å	...	0,08%	0,20%	0,70%	0,90%
	200Å < pore size < 300Å	...	0,04%	0,10%	0,35%	0,50%

These values are given as an indication and may vary depending on the molecules and adsorbents used.

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Gradient mode

Isocratic vs Gradient

An other way to enhance the separation consists in increasing the amount of the strong solvent all along the elution, starting with a low percentage of this one.

A gradient can be modeled in two ways: linear or incremental.

Depending on the difficulty of the separation one may be more suitable than the other. Interchim® has developed an algorithm that automates the composition of the gradient according to the difficulty of the separation and the particle size of the columns used.

Compared with an isocratic method, a well-developed gradient makes it possible to significantly reduce the width of the peaks and thus considerably increase the mass of crude to be purified.

This influence is very clear in areas of Rf between 0.1 and 0.7.Isocratic elution will not allows good selectivity in a restricted Rf zone between 0.1 and 0.3.

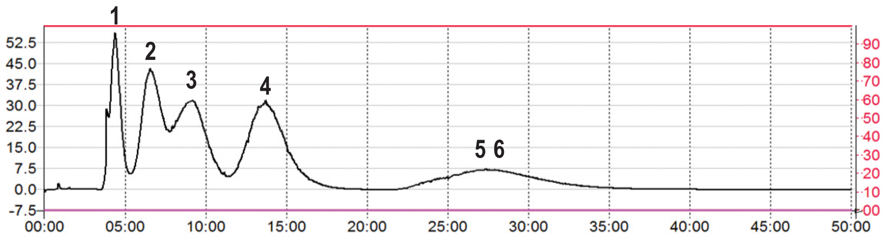
According to the following purification:

Compound 2: Rf = 0.52

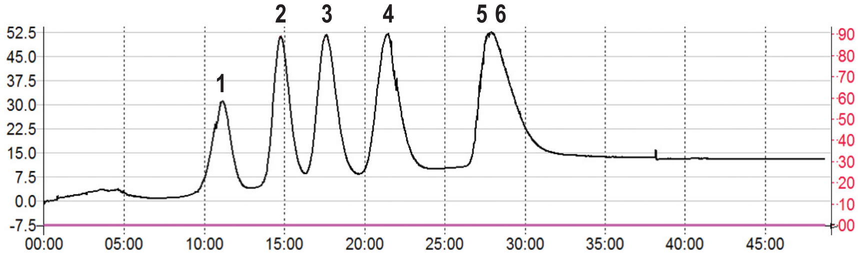
Compound 3: Rf = 0.33

Eluent: cyclohexane/ethyl acetate column type F0025 IR 50µm flow rate 15mL/min

Isocratic 91%/9% (original TLC eluent composition)



Gradient slope 2% => 17%



Conclusion

According to those explanations, it is easy to understand that a longer column or a smaller particle size gives more efficiency and enhance greatly the separation.

By choosing the right silica gel and the right eluent, the compounds will interact advantageously and will be retained differently.

The gradient elution mode will also greatly improve the separation all along the purification.

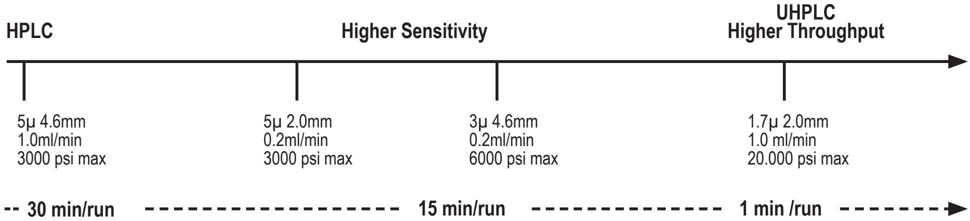
Finally the column size must be related to the quantity of crude sample to purify and the difficulty of the separation.

Ultra Performance Flash Purification
or how to do high throughput purification?

Liquid chromatography is a technique that first requires finding the right selectivity to properly separate the compounds. The purpose of preparative liquid chromatography is to recover the compound of interest with an aim of purity, quantity and productivity.

Improvements in the analytical techniques of liquid chromatography over the last thirty years have mainly focused on the transition from the use of irregular silicas to spherical silicas, the increase in the supply of stationary phases, in particular for the reverse phase and finally the benefit of reducing the size of the silica particles.

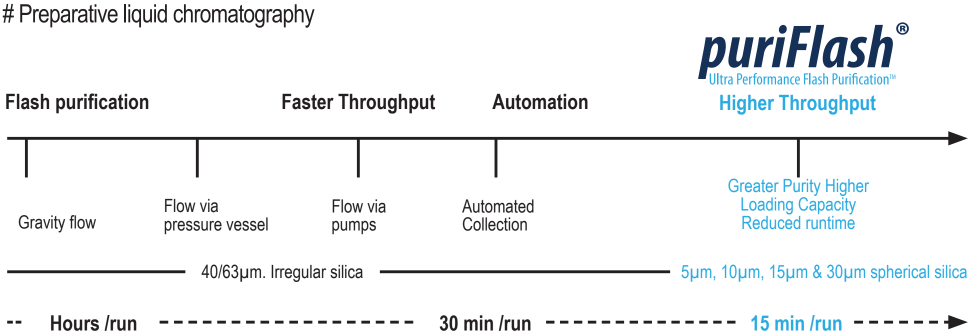
Analytical liquid chromatography



This evolution has led to a high increase of productivity by a significant reduction of the runtime, tens of minutes to min.

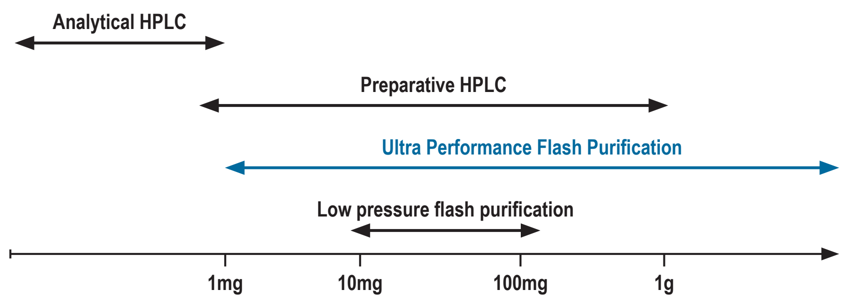
It is always a challenge and often a compromise to obtain the desired purity, loading and throughput. Since years, Interchim® has pushed to scientists a similar approach, as for the analytical field, called " Ultra Performance Flash Purification" to help them to achieve their day to day challenge.

Preparative liquid chromatography



This concept has established the Ultra Performance Flash Purification as an innovative solution that offers a larger spectrum of purification versus other techniques.

Quantity of material to be separated



a) Irregular vs. Spherical silicas

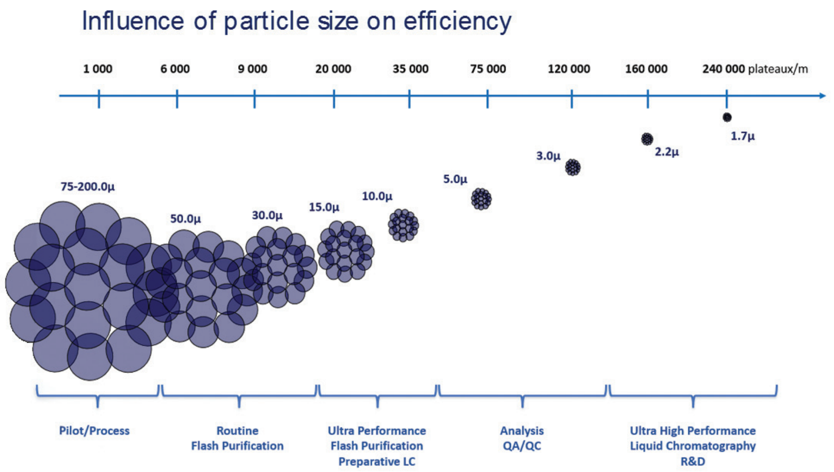
Usually spherical silicas are purer and have narrow particle and pore size distribution than irregular one. These advantages make them easier to pack in column with an optimum bed density. The benefit for the user is an optimized and reproducible recovery, a lower collection volume and a reduced evaporation time.

b) Stationary Phases

A wide range of selectivities must be available to cover all the different polarities of samples to be purified. Interchim offers more than 50 selectivities for normal and reverse phase, ion exchange, hilic, … and for the purification of peptides and polypeptides.

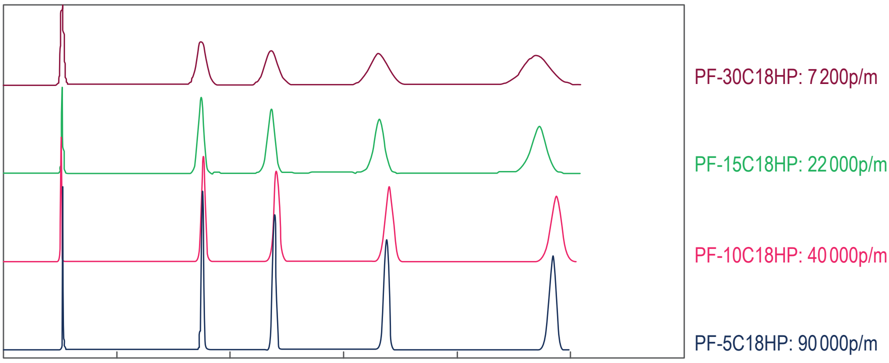
The benefit of reduced particles size

As the particle size of the silica beads reduced, the efficiency increase while the related back pressure of a packed column with such particle increase.

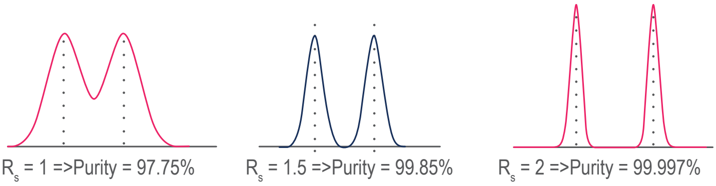


The benefit of reduced particles size

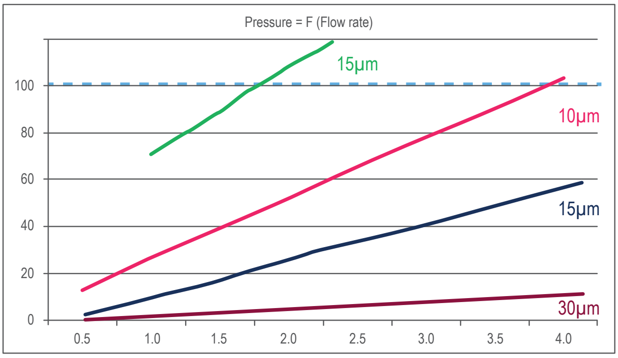
One of the benefit of greater efficiency is the direct impact on the peak shape. The higher the efficiency is the shaper the peak is. Which means for a single peak, smaller collection volume and less evaporation time.



The impact is far greater when the question is to separate two peaks. For the same selectivity, the higher the efficiency is, the higher the resolution is.



This lead to give to the scientist more flexibility by either to collect a product with higher purity or to increase the loadability or to reduce the runtime. Finally, it increases the global productivity of the purification.
The counter-part is the back pressure generated by the reduction of the particle size.



"Optimum" flow rate @ 0.75mL/min for a 4.6mm i.d. column

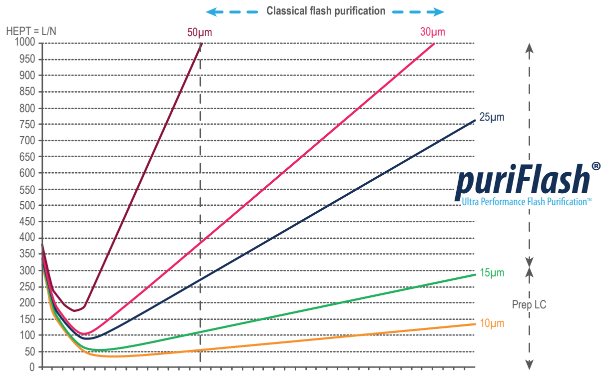
The above experiments have been done on a 5, 10, 15 and 30 micron Uptisphere Strategy C18HQ packed into a 4.6x250mm columns.
At the optimum flow rate for a 21.2mm id (21mL/min), a 28mm id (37mL/min) and a 50mm id (118mL/min) the back pressure generated, under MeOH/H_2O (50/50) is for a:
30 micron = 3 bar – 15 micron = 6 bar – 10 micron = 20 bar – 5 micron = 60 bar

The benefit of reduced particles size

Interchim® has developed over the years high quality pump able to handle, with accuracy and repeatability, such a pressure range to satisfy the scientist purification objective of purity, loading capacity or runtime.

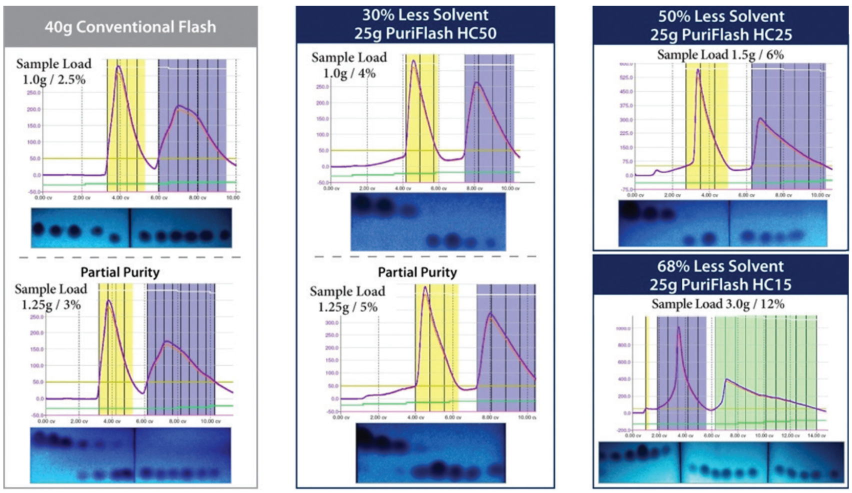
Increasing flow rate without compromising with resolution is also a benefit of using smaller particle size:

H = Fion (flow rate) for a 25g column



4.6x250mm col	
Paticle size	Opt flow rate
5.0µm	0.710mL/min
10.0µm	0.370mL/min
15.0µm	0.240mL/min
20.0µm	0.190mL/min
25.0µm	0.160mL/min
30.0µm	0.130mL/min
50.0µm	0.087mL/min

Example of the advantages & benefit of the Ultra Performance Flash Purification concept



100% Purity				
Column	Sample Load	Tubes	Collected Volume	Solvent Consumed
40g Conventional	1.0g	11	263mL	480mL
25g puriFlash® HC50	1.0g	7	144mL	340mL
25g puriFlash® HC25	1.5g	9	199mL	360mL
25g puriFlash® HC15	3.0g	17	367mL	460mL

Partial Purity / Overload Condition				
Column	Sample Load	Tubes	Collected Volume	Solvent Consumed
40g Conventional	1.25g	13	298mL	540mL
25g puriFlash® HC50	1.25g	8	186mL	360mL

Test Conditions

Sample: 50mg/mL dibutyl and diethyl phtalate UV: 254nm
Flow rate: 20mL/min Tube volume: 25mL
Solvents: A:Heptane B: EtOAc
Gradient: 0 - 7 CV 5% B, 7 - 13 CV 5 - 8% B

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NOTES

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NOTES

Stationary Phases & Columns

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Name	ITM Code	USP Code	Ø Pore	Surface	1.7	2.2	2.5	2.6	3	3.5	5	10	15	20	30	50	µm
Small Organics molecules Analysis & Purification																	
puriFlash®	C18-XS	L1	100Å	300m²/g							x	x	x		x		
puriFlash®	C18-HP	L1	100Å	300m²/g							x	x	x		x	x	
puriFlash®	C18-AQ	L1	100Å	300m²/g							x	x	x		x		
puriFlash®	RP-AQ	L7	60Å	500m²/g									x		x		
puriFlash®	Diol	L20	60Å	500m²/g							(x)	x	x		x	x	
puriFlash®	SIHP	L3	60Å	500m²/g							x	x	x		x	x	
puriFlash®	NH_2	L8	100Å	300m²/g							x	x	x		x	x	
puriFlash®	IR-C18	L1	60Å	450m²/g												(x)	
puriFlash®	MM1	L44	100Å	400m²/g												x	
puriFlash®	CN	L10	60Å	500m²/g									x			x	
puriFlash®	SIHC	L3	60Å	680m²/g									x		(x)	x	
puriFlash®	IR-SI	L3	60Å	450m²/g										(x)		(x)	
puriFlash®	SI-$AGNO_3$		60Å	500m²/g												x	
puriFlash®	NH_2HC	L8	60Å	680m²/g												x	
puriFlash®	SCX	L50	100Å	400m²/g												x	
puriFlash®	SAX	L14	60Å	500m²/g												x	
puriFlash®	X		100Å	800m²/g													40
puriFlash®	P6		60Å														100
puriFlash®	ALN		60Å	200m²/g													32/63
puriFlash®	ALB		60Å	200m²/g													32/63
puriFlash®	AC																420/840

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Greffage	Fonctionalisation	% Carbon	End-Capping	pH Stability	Use mode	Application
C18 - octadecyl	Mono-functional	17.0%	Multi-step	1.0 - 10.0	Reverse	The proprietary multi-step bonding technology guarantees a fully end-capped phase, stable under basic pH conditions up to pH: 10. It's an excellent phase for the integral purification of basic drugs.
C18 - octadecyl	Mono-functional	16.5%	One-step	1.5 - 7.5	Reverse	Serves many pharmaceutical applications. Excellent choice for routine purification in reverse phase mode.
C18 - octadecyl	Mono-functional	14.0%	Mixte	2.0 - 7.5	Reverse	The bonding chemistry allows to start gradient with 100% of water. Suitable for the purification of mid and non polar compounds.
RP-alkyl	Mono-functional	6.0%	Mixte	2.0 - 7.5	Reverse	The bonding chemistry allows to start gradient with 100% of water. Suitable for the purification of high and mid polar compounds. Compare to C18, peaks are eluted earlier from the beginning of the gradient.
Diol	Mono-functional		None	1.5 - 6.5	Normal	The diol fonction provides globally a neutral surface onto the silica. It leads to greater separation of basic compounds by normal phase vs. regular silica.
Silica, HP grade			None	1.5 - 6.5	Normal	Non-ionic, polar organic compounds.
NH2 - amino	Mono-functional	4.0%	One-step	2.0 - 6.5	Reverse / Normal / Ion Exchange	Can be either weak anion exchangers for strong acids, or polar media that can interact with OH, NH, SH ...
C18 - octadecyl	Mono-functional	20.0%	One-step	1.5 - 7.0	Reverse	Serves a broad-ship of purification requirements of non polar compounds.
RP/SCX	Mono-functional		One-step	1.0 - 7.5	Reverse / Ion Exchange	Ion exchange and hydrophobic chains are bonded onto the surface of silica providing unique selectivity. Compounds that possess basic functionality are retained by ion exchange functionality. Passing an organic solvent will elute hydrophobic compounds.
CN - cyano	Mono-functional	5.0%	One-step	1.5 - 7.5	Reverse / normal	CN functional groups can be used either in normal phase to purify polar compounds or in reversed phase for mid-polar compounds.
Silica, HC grade			None	1.5 - 6.5	Normal	Non-ionic, polar organic compounds.
Irregular silica			None	1.5 - 6.5	Normal	Non-ionic, polar organic compounds.
Silica, AgNO3 coated			None	1.5 - 6.5		purification of stereo-isomers compounds.
NH2 - amino	Poly-functional	4.0%	None	1.5 - 6.5	Reverse / Normal / Ion Exchange	Can be either weak anion exchangers for strong acids, or polar media that can interact with OH, NH, SH ...
Strong Cation Exchanger	Mono-functional		None	1.0 - 7.5	Ion Exchange	Strong cation exchange (SCX) contains sulfonic acid used to purify weak basic compounds which have one or more positive charges.
Strong Anion Exchanger	Mono-functional		None	1.0 - 7.5	Ion Exchange	Strong anion exchange (SAX) contains quaternary amine used to purify weak acid compounds which have one or more negative charges.
PSDVB			None	1.0 - 13	Reverse	Universal polymer with high surface area designed to purify a broad range of hydrophobic compounds through a variety of matrices in a pH range from 1 to 14.
Polyamide-6			None			Exhibits a constant selectivity toward flavones, chalkones, anthraquiNones, aromatic nitro compounds, DNP amino acids, phenols, carbonic acids, acid amides, sulphonic acids and amides of sulphonic acids as well as towards amines and quiNones.
Activated, Neutral Alumina			None			Natural products , Essential oils, Antibiotics, Vitamins, Alkaloïds, …
Activated, Basic Alumina			None			Plant extraction, organic solvent purification, Alkaloïds,…
Activated Carbon			None			Décolorization.

Name	ITM Code	USP Code	Ø Pore	Surface	1.7	2.2	2.5	2.6	3	3.5	5	10	15	20	30	50	µm
Small Organics molecules Analysis & Purification (suite)																	
Uptisphere® Strategy™	C18-3	L1	100Å	425m^2/g					x		x	x	x				
Uptisphere® Strategy™	C18-HQ	L1	100Å	425m^2/g	x	x			x		x	x	x				
Uptisphere® Strategy™	C18-RP	L1	100Å	425m^2/g		x			x		x	x	x				
Uptisphere® Strategy™	PHC4	L11	100Å	300m^2/g		x			x		x	x	x				
Uptisphere® Strategy™	HIT hilic	L3	100Å	425m^2/g		x			x		x	x	x				
Uptisphere® Strategy™	HIA hilic		100Å	300m^2/g		x			x		x	x	x				
Uptisphere® Strategy™	SI	L3	100Å	425m^2/g		x			x		x	x					
Uptisphere®	C18-NEC	L1	120Å	320m^2/g		x			x		x	x	x				
Uptisphere®	CN	L10	120Å	320m^2/g					x		x	x	x				
Daicel®	IA																20
Daicel®	IC																20
Daicel®	ID																20
Daicel®	OD-I																20

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Greffage	Fonctionalisation	% Carbon	End-Capping	pH Stability	Use mode	Application
C18 - octadecyl	Mono-functional	22.0%	Multi-step	1.0 - 12	Reverse	The high bonding density of C18-3 facilitiates a strong separation of non polar compounds. Multi-step bonding technology guarantees a fully end-capped phase, stable under basic pH conditions. C18-3 is an excellent phase for the separation of basic drugs at up to pH : 12.
C18 - octadecyl	Mono-functional	19.0%	Multi-step	1.0 - 10	Reverse	This utility phase serves many pharmaceutical applications. Its 425 m2/g surface area is providing excellent loading capacity.
C18 - octadecyl	Mono-functional	16.0%	Multi-step Mixte	1.5 - 8.0	Reverse	Suitable for mid & non polar compounds separation. RP shows excellent mechanical stability that makes it an excellent tool for purification under acidic or basic conditions.
Phenyl - Butyl	Mono-functional	12.0	One-step	1.5 - 7.5	Reverse	Very selective for compounds with aromatic cycles and mid-polar compounds.
Proprietary	Proprietary		Proprietary	1.5 - 7.0	Hilic	Aqueous normal phase separation (ANP) of water-soluble compounds. Typical mobile phase: water / ACN (> 70%). ANP is an excellent alternative to RP purification for highly polar compounds.
Proprietary	Proprietary		Proprietary	2.0 - 7.0	Hilic	Aqueous normal phase separation (ANP) of water-soluble compounds. Typical mobile phase: water / ACN (> 70%). ANP is an excellent alternative to RP purification for highly polar compounds.
Ultra pure silica			None	1.5 - 7.0	Normal	Non-ionic, polar organic compounds.
C18 - octadecyl	Mono-functional	16.0%	None	1.5 - 6.5	Reverse	NEC strongly retains the polar and mid-polar compounds.It overcomes peak tailing with compounds that contain chains and / or carbon cycles combined with numerous polar groups and/or basic in character.
CN - cyano	Mono-functional	8.0%	One-step	2.0 - 7.0	Reverse / Normal	CN functional groups can be used either in normal phase to purify polar compounds or in reversed phase for mid-polar compounds.
Amylose tris (3,5-dimethylphenylcarbamate)			None			Chiral compounds by normal & reversed phase such as Bupivacaine, Indapamide, suprofern, …
Cellulose tris (3,5-dichlorophenylcarbamate)			None			Chiral compounds by normal & reversed phase such as Econazole, Indoprofen, 5-Fluoro-1 (tetrahydro-2-furyl) uracil …
Amylose Tris (3-Chlorophenylcarbamate)			None			Chiral compounds by normal & reversed phase such as (±)-Hydrobenzoin, Sulconazole, Tropic acid, …
Cellulose tris (3,5-dimethylphenylcarbamate)			None			Chiral compounds by normal & reversed phase such as 2-Bromomethyl-1,4-benzodioxane, pindolol, Troger's Base, …

Name	ITM Code	USP Code	Ø Pore	Surface	1.7	2.2	2.5	2.6	3	3.5	5	10	15	20	30	50	µm
Oligonucleotides & Peptides Analysis & Purification																	
puriFlash® Bio CS Evolution™	C18-N	L1	85Å	130m²/g				x									
puriFlash® Bio 100	C18-N	L1	100Å	320m²/g			x			x	x	x	x		x		
puriFlash® Bio 100	C18-T	L1	100Å	320m²/g			x			x	x	x	x		x		
puriFlash® Bio 100	C18-XS	L1	100Å	320m²/g			x			x	x	x	x		x		
puriFlash® Bio 200	C18-N	L1	200Å	200m²/g			x			x	x	x	x		x		
puriFlash® Bio 200	C18-T	L1	200Å	200m²/g			x			x	x	x	x		x		
puriFlash® Bio 200	C18-XS	L1	200Å	200m²/g			x			x	x	x	x		x		
puriFlash® Bio 200	C8-N	L7	200Å	200m²/g			x			x	x	x	x		x		
puriFlash® Bio 300	C4-AQ	L26	300Å	100m²/g						x	x	x	x		x		
puriFlash® Bio 100	RPNH		100Å	320m²/g			x										
puriFlash® Bio 200	RPNH		200Å	200m²/g						x	x	x	x		x		
puriFlash® Bio 300	RPNH		300Å	100m²/g						x	x	x	x		x		
puriFlash® Bio 200	RP		200Å	200m²/g													45
puriFlash® Bio 300	RPT		300Å	100m²/g												x	
puriFlash® PT	C18-AQ	L1	200Å	150m²/g									x				
puriFlash® PT	C8	L7	200Å	150m²/g									x				
puriFlash® PT	C4	L26	200Å	150m²/g									x				
puriFlash® PP	C18	L1	300Å	100m²/g									x				
puriFlash® PP	C4	L26	300Å	100m²/g									x				

Greffage	Fonctionalisation	% Carbon	End-Capping	pH Stability	Use mode	Application
C18 - octadecyl	Mono-functional		None	1.5 - 7.0	Reverse	In-Process QA/QC of Peptides synthesis.
C18 - octadecyl	Mono-functional	15.5%	None	1.5 - 8.0	Reverse	In-Process QA/QC of Peptides Synthesis. Analysis & Purification of polar Peptides with les than 40AA & mw. up to 5KDa under pseudo hilic mode with 85% -to- 95% ACN. Analysis & Purification of hydrophobic Peptides with les than 40AA & mw. up to 5KDa.
C18 - octadecyl	Tri-functional	17.0%	One-step	1.5 - 8.0	Reverse	Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with les than 40AA & mw. up to 5KDa.
C18 - octadecyl	Mono-functional	17.0%	Multi-step	1.0 - 10.0	Reverse	Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with less than 40AA & mw. up to 5KDa under basic conditions up to pH: 10.0.
C18 - octadecyl	Mono-functional	7.0%	None	1.5 - 8.0	Reverse	Analysis & Purification of polar Peptides less than 160AA & mw. up to 20KDa under pseudo hilic mode with 85% -to- 95% ACN. Analysis & Purification of hydrophobic Peptides with less than 80AA & mw. up to 10KDa.
C18 - octadecyl	Tri-functional	11.0%	One-step	1.5 - 8.0	Reverse	Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with less than 80AA & mw. up to 10KDa.
C18 - octadecyl	Mono-functional	11.0%	Multi-step	1.0 - 10.0	Reverse	Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with less than 80AA & mw. up to 10KDa under basic conditions up to pH: 10.0.
C8 - octyl	Mono-functional	5.0%	None	1.5 - 8.0	Reverse	Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with less than 160AA & mw. up to 20KDa.
C4 - butyl	Mono-functional	3.0%	Mixte	1.5 - 8.0	Reverse	Analysis & Purification of natural Peptides, fatty acids larger than 80AA & mw. up to 100KDa.
RP - Alkyl chain / Amines	Mono-functional	4.0%	None	1.5 - 8.0	Reverse / Ion Exchange	Ultra fast & efficient analysis of oligonucleotides up to 25 mer.
RP - Alkyl chain / Amines	Mono-functional	4.0%	None	1.5 - 8.0	Reverse / Ion Exchange	Analysis & Purification of oligonucleotides up to 40 mer.
RP - Alkyl chain / Amines	Mono-functional	2.0%	None	1.5 - 8.0	Reverse / Ion Exchange	Analysis & Purification of large oligos, aptamers, DNA.
RP - Alkyl chain	Mono-functional	5.0%	Mixte	1.5 - 8.0	Reverse	Desalting columns for Synthetic Peptides.
RP - Alkyl chain	Tri-functional	3.0%	One-step	1.5 - 8.0	Reverse	Host Cell Fishing in process scale clarification of cell culture harvests. To remove both host cell protein and host cell DNA from bioprocessing streams containing recombinant monoclonal antibody.
C18 - octadecyl	Mono-functional	12.0%	Mixte	1.5 - 8	Reverse	mid-polar BioDrugs & Peptides with medium molecular weight. 100% water compatible.
C8 - octyl	Mono-functional	5.0%	One-step	1.5 - 8	Reverse	BioDrugs & Peptides with medium molecular weight.
C4 - butyl	Mono-functional	3.0%	One-step	1.5 - 8	Reverse	BioDrugs & Peptides with high molecular weight.
C18 - octadecyl	Mono-functional	10.0%	One-step	1.5 - 8	Reverse	Weakly hydrophobic peptides & oligopeptides up to 50 kD.
C4 - butyl	Mono-functional	3.0%	One-step	1.5 - 8	Reverse	Hydrophobic proteines & polypeptides, 50 up to 150 kD.

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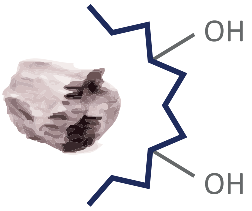
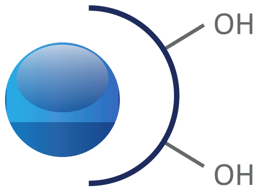
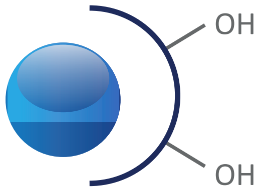
Normal Phase



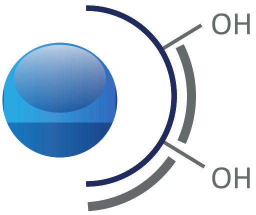
puriFlash® IR-SI
60Å - 450m²/g
20 & 40/63µm
pH stability: 1.5 to 6.5
Economical



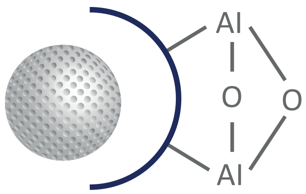
puriFlash® SI-HP
60Å - 500m²/g
5, 10, 15, 30 & 50µm
pH stability: 1.5 to 6.5
High efficiency



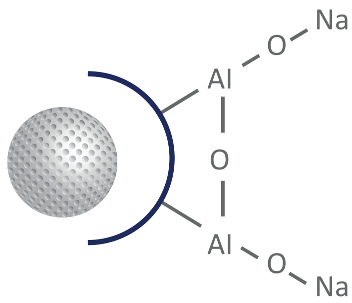
puriFlash® SI-HC
60Å - 680m²/g
15, 25 & 50µm
pH stability: 1.5 to 6.5
Greater loading capacity
& productivity
Low back pressure



puriFlash® SI-$AgNO_3$
60Å - 500m²/g
50µm
pH stability: 1.5 to 6.5
Purification of cis /
trans stero-isomers



ALN - Neutral
60Å - 200m²/g
32/63µm
pH stability: 1.0 to 12.0
Natural products, Essential oils, Antibiotics,
Vitamins, Alkaloids...

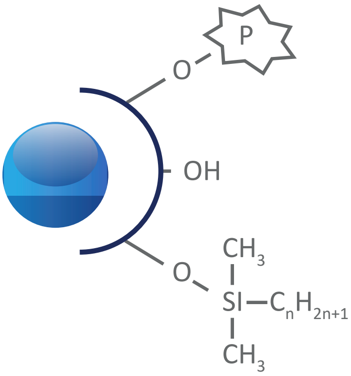


ALB - Basique
60Å - 200m²/g
32/63µm
pH stability: 1.0 to 12.0
Extraction of plants, purification organic
solvents, Alkaloids...

Disposable columns
Application: Specific non-ionic & polar organic molecules

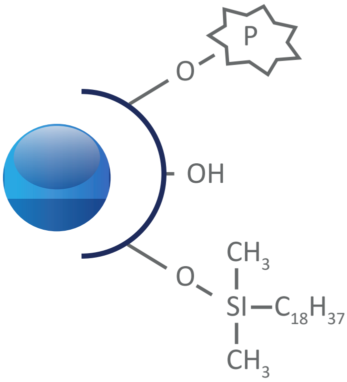
Notes:
Influence of water content of silica
The water contents are different between the silica gels used to make the TLC plates and the same materials used to make the spherical silica gels for purification
Flash:Silica gel for TLC = 6 - 6.5%
Spherical silica gel for Flash <or = 2.0%

Reverse Phase



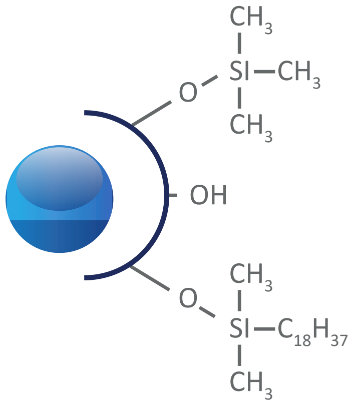
puriFlash® RP-AQ

60Å - 500m²/g
15 & 30µm
RP-alkyl
%C: 6
End-capping: Mixte
pH stability: 2.0 to 7.5
The bonding chemistry makes possible to start the gradient at a 100% of water. Suitable for the separation and purification of strongly and moderately polar molecules. Compared to a C18, the peaks are eluted earlier from the beginning of the gradient.



puriFlash® C18-AQ

100Å - 300m²/g
5, 10, 15 & 30µm
C18 Mono-functional
%C: 14
End-capping: Mixte
pH stability: 2.0 to 7.5
The bonding chemistry makes possible to start the gradient at a 100% of water. Suitable for the separation and purification of moderately polar and non-polar molecules.

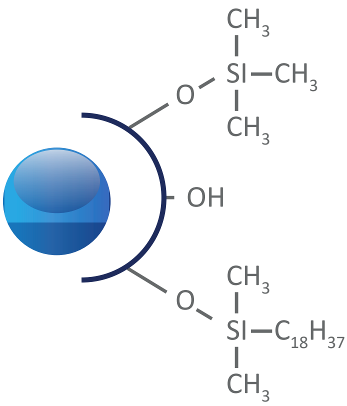


puriFlash® C18-HP

100Å - 300m²/g
5, 10, 15, 30 & 50µm
C18 Mono-functional
%C: 16,5
End-capping: One-step
pH stability: 1.5 to 7.5
Suitable for multiple pharmaceutical applications. This is an excellent choice for routine reverse phase purifications.

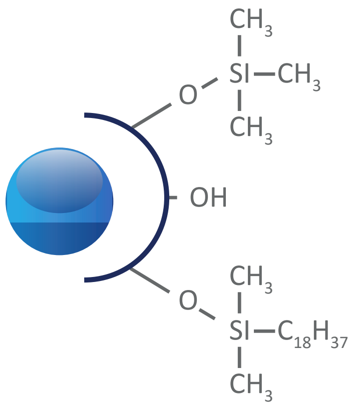
USP code: L1
Re-usable column
Application:
mid & non-polar organics compounds

Notes:
Also available for first step cleaning of crude sample => **Irregular puriFlash® IR C18**
60Å - 450m²/g - 40/63 µm - C18 monofonctionnel - %C: 20 -
End-capping: one-step - Stabilité pH: 1.5 to 7.0
Application: non-polar organics compounds



Uptisphere® Strategy™ C18-HQ

100Å - 425m²/g
1.7, 2.2, 3, 5, 10, 15µm
C18 Mono-functional
%C: 19
End-capping: Multi-step
pH stability: 1.0 to 10.0
Suitable for many pharmaceutical applications and routine methods. Its specific surface area of 425m²/g gives it a high loading capacity.

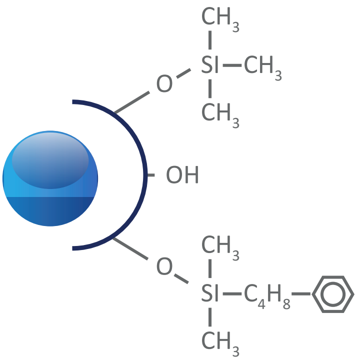


puriFlash® C18-XS

100Å - 300m²/g
5, 10, 15 & 30µm
C18 Mono-functional
%C: 17
End-capping: Multi-step
pH stability: 1 to 10.0
The proprietary end-capping multi-step technology ensures stability under high pH conditions, up to 10. It is an excellent phase for the complete separation of basic molecules.

Back to SUMMARY

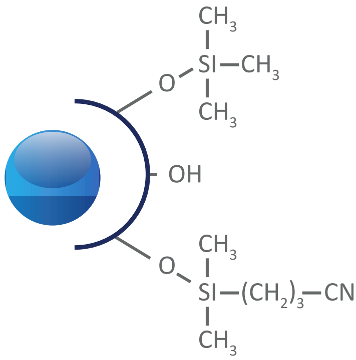
Reverse Phase



Uptisphere® Strategy™ PHC4

100Å - 300m²/g
2.2, 3, 5, 10, 15µm
PH C4 Mono-functional
%C: 12
End-capping: One-step
pH stability: 1.5 to 7.5
Very selective for compounds having aromatic rings and moderately polar compounds.

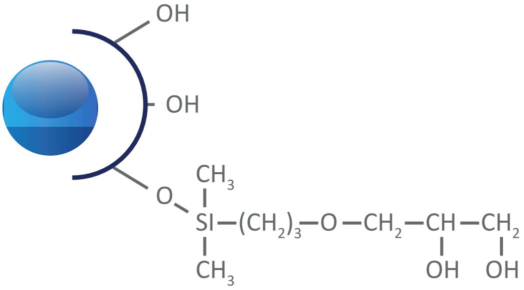
Reverse/Normal Phase



puriFlash® CN

60Å - 500m²/g
15 & 50µm
CN monofonctional
%C : 5
End-capping: One-step
pH stability: 1.5 to 7.5
Used in normal mode to purify polar compounds and in reverse mode for moderately polar.

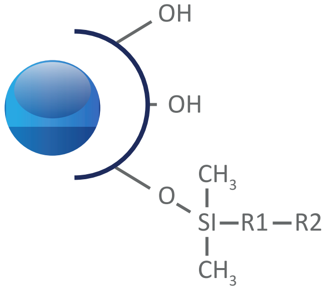
Normal Phase / Hilic



puriFlash® Diol

60Å - 500m2/g
5, 10, 15, 30 & 50µm
Diol Mono-functional
End-capping: None
pH stability: 1.5 to 6.5
The Diol function imparts a globally neutral surface to the silica. Compared to a virgin silica, this grafted diol silica allows a better separation of the basic molecules in normal phase.

Hilic

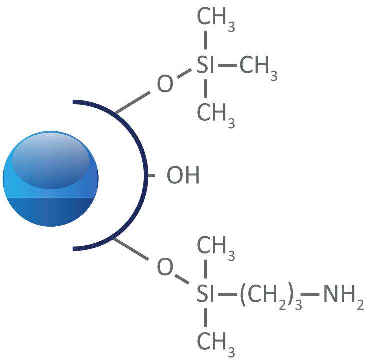


Uptisphere® Strategy™ Hilic-HIA

100Å - 300m²/g
2.2, 3, 5, 10, 15µm
Propriatary bonding & end-capping
pH stability: 2.0 to 7.0
Separation of highly polar water-soluble molecules in Hilic mode.
Typical mobile phase: H_2O/ACN
(> 70%).
ANP is an excellent alternative to reverse phase purification for highly polar compounds.

Re-usable columns

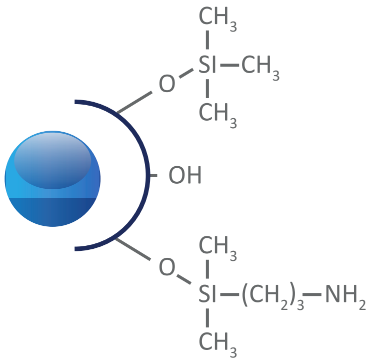
Normal Phase / Ion exchange



puriFlash® NH2-HC

60Å - 680m²/g
50µm
Amino
%C: 4
End-capping: n.c
pH stability: 1.5 to 6.5
Can be both a weak anion exchanger for strong acids or a polar phase that can interact with the OH, NH, SH ... functions.

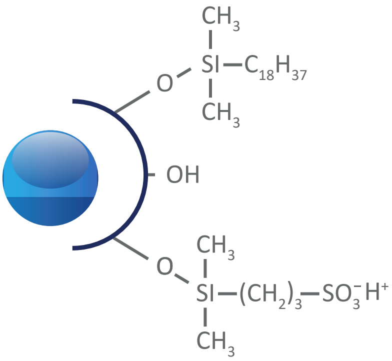
Normal Phase / Ion exchange



puriFlash® NH2

100Å - 300m²/g
5, 10, 15, 30 & 50 µm
Amino
%C: 4
End-capping: One-step
pH stability: 2 to 6.5
Can be both a weak anion exchanger for strong acids or a polar phase that can interact with the OH, NH, SH ... functions.

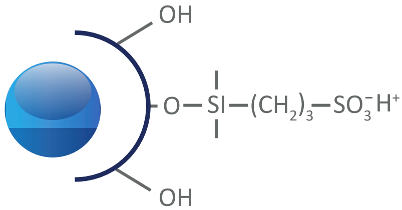
Reverse Phase / Ion exchange



puriFlash® MM1

100Å - 400m²/g
50µm
RP alkyl / Strong cation exchange - SCX
0.1meq/g
End-capping: One-step
pH stability: 1.0 to 7.5
The hydrophobic & ion exchange mixed bonding give a unique selectivity.
Compounds which have a basic function are retained by the ion exchanger. An organic solvent will eluate the hydrophobic compounds

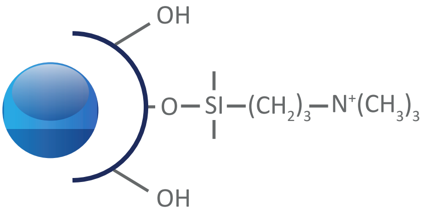
Ion exchange



puriFlash® SCX

100Å - 400m²/g
50µm
Strong cation exchange - SCX
0.3meq/g
End-capping: None
pH stability: 1.0 to 7.5
A strong cation exchanger containing sulphonic acids for purifying weakly basic molecules having one or more positive charges.

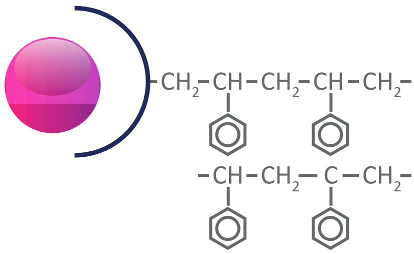
Ion exchange



puriFlash® SAX

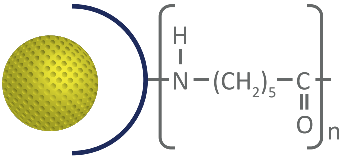
60Å - 500m²/g
50µm
Strong anion exchange - SAX
0.3meq/g
End-capping: None
pH stability: 1.0 to 7.5
A strong anion exchanger containing quaternary amines for purifying weakly acid molecules having one or more negative charges, nucleotides, nucleosides, organic acids, etc.

Reverse Phase



Ultra-Pur PSDVB (Atoll X)

100Å - 800m²/g
40µm
pH stability: 1.0 to 13.0
A Universal polymer with a large specific surface for the purification of medium and non-polar compounds with Mw < 5 KD under pH conditions from 1 to 13.

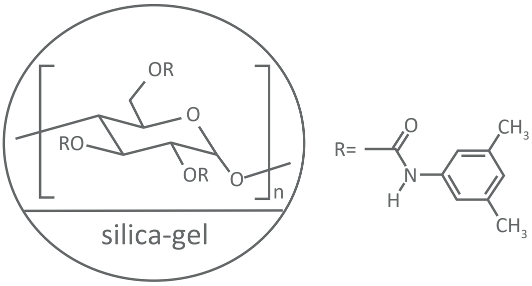


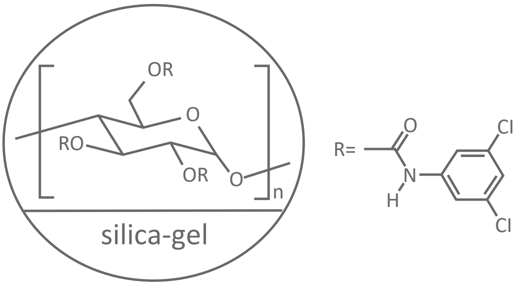
Polyamide 6

60Å - 100µm
pH stability: n.c.
Selective towards flavones, anthraquinones, aromatic compounds, Nitrates, phenols, sulfonic acids and carboxylic acids, amines, amides, etc…

Tel.: +33 4 70 03 88 55 | Hotline: +33 4 70 03 73 01 | E-mail: interfine@interchim.fr | Fax: +33 4 70 03 82 60 | WWW.INTERCHIM.COM

Chiral Stationary Phases



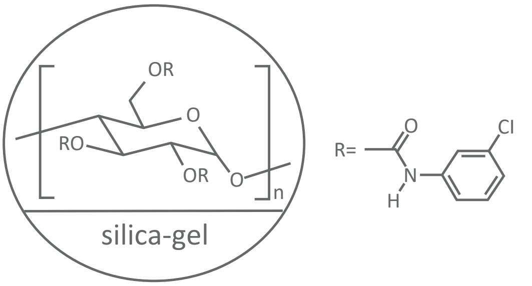


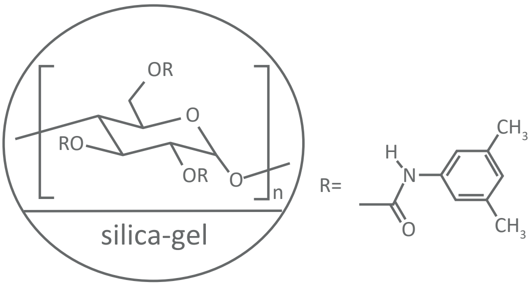
IA chiral

20µm
Amylose tris-(3.5-dimethylphenyl carbamate) Immobilized on silica gel
Chiral compounds in normal and reverse phase such as Bupivacaine, Indapamide, suprofern...

IC chiral

20µm
Cellulose tris-(3.5-dichlorophenylcarbamate) Immobilized on silica gel
Chiral compounds in normal and inverse phase, such as Econazole, Indoprofen, 5-Fluoro-1 (tetrahydro-2-furyl) uracil, etc.





ID chiral

20µm
Amylose tris-(3-Chlorophenylcarbamate) Immobilized on silica gel
Chiral compounds in normal and reverse phase such as (±) -Hydrobenzoin, Sulconazole, Tropic acid...

OD-I chiral

20µm
cellulose tris-(3.5 dimethylphenylcarbamate) Immobilized on silica gel
Chiral compounds in normal and reverse phase such as 2-Bromomethyl-1.4-benzodioxane, pindolol, Troger's Base, etc.

puriFlash® Dry-Load

Dry-load columns for solid deposits allow the injection of a raw sample insoluble (or soluble) in the mobile phase.
Compared to liquid injection, the solid deposit avoids the diffusion of raw sample in the purification column. It improves the resolution, the efficiency and the purity of the products collected.
The solid deposit that can be made with silica, C18 or Celite. Unlike open cartridges, it does not require the use of a piston or of specific adapters.
The max. pressure is 2x the standard solid deposit cartridges.
They are compatible with the use of Interchim® 15µm puriFlash® columns.

- Luer lockInlet & Outlet
- 4g to 300g Dry-load
- Compatible with all flash purification systems

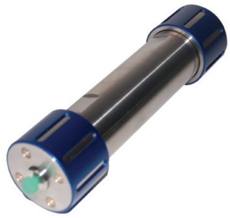
Nature	Type	Format	P/N	Qty
puriFlash® Dry-Load	Empty	F0004	PF-DLE-F0004	20 u
		F0012	PF-DLE-F0012	20 u
		F0025	PF-DLE-F0025	20 u
		F0040	PF-DLE-F0040	20 u
		F0060	PF-DLE-F0060	10 u
		F0080	PF-DLE-F0080	5 u
		F0100	PF-DLE-F0100	5 u
		F0120	PF-DLE-F0120	5 u
		F0220	PF-DLE-F0220	5 u
		F0330	PF-DLE-F0330	5 u
puriFlash® Dry-Load - Tightening tool			JV0470	1 u
puriFlash® Dry-Load	SILICA HC 80%	F0004	PF-DLSIHC08-F0004	20 u
		F0012	PF-DLSIHC08-F0012	20 u
		F0025	PF-DLSIHC08-F0025	20 u
		F0040	PF-DLSIHC08-F0040	20 u
puriFlash® Dry-Load	SILICA HC 50%	F0004	PF-DLSIHC05-F0004	20 u
		F0012	PF-DLSIHC05-F0012	20 u
		F0025	PF-DLSIHC05-F0025	20 u
		F0040	PF-DLSIHC05-F0040	20 u
puriFlash® Dry-Load	CELITE 80%	F0004	PF-DLCET08-F0004	20 u
		F0012	PF-DLCET08-F0012	20 u
		F0025	PF-DLCET08-F0025	20 u
		F0040	PF-DLCET08-F0040	20 u
puriFlash® Dry-Load	C18 STD 80%	F0004	PF-DLIRC1808-F0004	5 u
		F0012	PF-DLIRC1808-F0012	5 u
		F0025	PF-DLIRC1808-F0025	5 u
		F0040	PF-DLIRC1808-F0040	5 u
puriFlash® Dry-Load	C18 STD 50%	F0004	PF-DLIRC1805-F0004	5 u
		F0012	PF-DLIRC1805-F0012	5 u
		F0025	PF-DLIRC1805-F0025	5 u
		F0040	PF-DLIRC1805-F0040	5 u

Nature	Type	Size	P/N	Qty
puriFlash® HP Dry-Load	**Empty**	50 x 21.2 mm	**OA0320**	1 u
		75 x 21.2 mm	**OA0330**	1 u
		100 x 21.2 mm	**7A1870**	1 u
		50 x 30 mm	**OA0340**	1 u
		75 x 30 mm	**OA0350**	1 u
		100 x 30 mm	**7A1880**	1 u
puriFlash® Dry-Load - Tightening tool				
Spanner wrench for 21.2 mm ID			**7A1590**	1 u
Spanner wrench for 30 mm ID			**7A1610**	1 u
Replacement frit				
Replacement frit for 21.2 mm ID			**0A2100**	1 u
Replacement frit for 30 mm ID			**0A2110**	1 u

Code	F0001	F0004	F0012	F0025	F0040	F0080	F0120	F0220	F0330	F0800	F1600
Ø int. (mm)	9	12	21	21	27	31	36	60	60	78	104
L (mm)	26	68	84	133	135	205	224	153	226	341	385
CV_0 (mL)	1.2	5	19	32	48	102	153	269	405	1 078	2 170
Flowrate - Typical (mL/min)	2.5	5	15	15	26	34	46	127	127	216	383
Flowrate - Range (mL/min)	1 - 10	5 - 20	15 - 50	15 - 50	20 - 70	30 -100	40 - 150	80 - 300	80 - 300	150 - 300	200 - 500

interchim®

Interchim® pre-packed prep-LC columns



Interchim® Preparative columns range from 10.0 to 50mm i.d for the purification of samples ranging from mg to g.

Column hardware & column packing

The tube polishing value (Ra) has a fundamental importance in preparative chromatography.
A primary reason for peak broadening and low efficiency is the use of a poorer hardware quality. As the mobile phase is slowed down near the column wall, molecules in the center of the mobile phase stream move faster than the molecules closer to the side.
All columns have extremely smooth internal surfaces (typically 8 μ inch of Ra) to considerably reduce issues of drag and maintain column efficiency. Efficiency is also managed through Interchim®'s state-of-the art proprietary packing processes - Modulo-cart Prep withstand packing pressures up to 550 bars contributing strongly to a good bed stability and column life time.

Sample dispersion

The loading of sample onto a preparative column requires stringent management to establish quality separations. Column overloading results in a poor retention of pure fraction and therefore particular attention needs to be placed upon selecting the appropriate column dimension and the properties of the stationary phase. In addition, a careful control of the introduction of sample to the column is necessary to establish a homogeneous sample dispersion through the sorbent bead head. Sample typically enters a preparative column through a 1/16" fitting; poor sample loading will lead to overloading certain areas of the stationary phase whilst other areas will be underloaded.
E.g. For a 50mm i.d column with a 500µm i.d capillary fitting - sample introduced onto the column (without any sample distributor) will only interact with 0.01% of the surface column head. As well as a dramatic loss in capacity there will also be a high potential for the column head to prematurely clog, rapidly reducing column life times.
To prevent this problem Interchim®'s Modulo-cart Preparative columns are outfitted with a sample distributor. The sample distributor design maximizes the efficiency of sample volume dispersion and the sample mass introduced to the surface of the column head raising column life time.

Interchim® DAC columns

DAC stands for dynamic axial compression. It combines the preparative column and packing system together. It is very simple to operate. The column can be used online when it is packed. Don't take the column down!
The piston of the column always produces a stable pressure on packing bed which prevent the collapse and loose of the column bed.
They can be packed with small particulate media to reach high levels of performance.

- Column tube material: 316L
- Roughness: Inner surface Ra ≤ 0.4µm
- Filter: 316L Pore size 3-5µm
- High pressure seal PTFE and 316L
- Operating temperature: 5-60°C
- Control pannel: air pressure gauge, oil gauge, regulating valve, emmergency stop switch, change direction valve, shutt-off valve
- Air source: ≥ 6bar, output ≥ 8m3/min

P/N	Format	ID	Max bed height	Inlet/Outlet connection	Overall dimensions	weight
KV7350	DAC ID50	50mm	300mm	1/16"	550mm x 500mm x 1900mm	100kg
KV7370	DAC ID80	80mm	300mm	1/8"	550mm x 600mm x 2200mm	200kg
KV7390	DAC ID100	100mm	300mm	1/8"	550mm x 600mm x 2200mm	250kg

puriFlash® C18-STD

Flash Columns	Size	50µm	RFID	Qty
	F0004	IR-50C18-F0004	-R	4u
	F0012	IR-50C18-F0012	-R	2u
	F0025	IR-50C18-F0025	-R	1u
	F0040	IR-50C18-F0040	-R	1u
	F0080	IR-50C18-F0080	-R	1u
	F0120	IR-50C18-F0120	-R	1u
	F0220	IR-50C18-F0220	-R	1u
	F0330	IR-50C18-F0330	-R	1u
	F0800	IR-50C18-F0800	-R	1u
	F0160	IR-50C18-F1600	-R	1u

RFID Columns
add [-R] at the end of P/N

puriFlash® C18-XS

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PF5C18XS-250/P46	-R	1u	PF10C18XS-250/P46	-R	1u	PF15C18XS-250/P46	-R	1u
150 x 10.0mm	PF5C18XS-150/100	-R	1u	PF10C18XS-150/100	-R	1u	PF15C18XS-150/100	-R	1u
250 x 10.0mm	PF5C18XS-250/100	-R	1u	PF10C18XS-250/100	-R	1u	PF15C18XS-250/100	-R	1u
50 x 21.2mm	PF5C18XS-050/212	-R	1u	PF10C18XS-050/212	-R	1u	PF15C18XS-050/212	-R	1u
100 x 21.2mm	PF5C18XS-100/212	-R	1u	PF10C18XS-100/212	-R	1u	PF15C18XS-100/212	-R	1u
150 x 21.2mm	PF5C18XS-150/212	-R	1u	PF10C18XS-150/212	-R	1u	PF15C18XS-150/212	-R	1u
250 x 21.2mm	PF5C18XS-250/212	-R	1u	PF10C18XS-250/212	-R	1u	PF15C18XS-250/212	-R	1u
50 x 30.0mm	PF5C18XS-050/300	-R	1u	PF10C18XS-050/300	-R	1u	PF15C18XS-050/300	-R	1u
100 x 30.0mm	PF5C18XS-100/300	-R	1u	PF10C18XS-100/300	-R	1u	PF15C18XS-100/300	-R	1u
150 x 30.0mm	PF5C18XS-150/300	-R	1u	PF10C18XS-150/300	-R	1u	PF15C18XS-150/300	-R	1u
250 x 30.0mm	PF5C18XS-250/300	-R	1u	PF10C18XS-250/300	-R	1u	PF15C18XS-250/300	-R	1u
50 x 50.0mm	PF5C18XS-050/500	-R	1u	PF10C18XS-050/500	-R	1u	PF15C18XS-050/500	-R	1u
250 x 50.0mm	PF5C18XS-250/500	-R	1u	PF10C18XS-250/500	-R	1u	PF15C18XS-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0001	SC-15C18XS-F0001	-R	25u	---	---	---
F0004	PF-15C18XS-F0004	-R	4u	PF-30C18XS-F0004	-R	4u
F0012	PF-15C18XS-F0012	-R	2u	PF-30C18XS-F0012	-R	2u
F0025	PF-15C18XS-F0025	-R	1u	PF-30C18XS-F0025	-R	1u
F0040	PF-15C18XS-F0040	-R	1u	PF-30C18XS-F0040	-R	1u
F0080	PF-15C18XS-F0080	-R	1u	PF-30C18XS-F0080	-R	1u
F0120	PF-15C18XS-F0120	-R	1u	PF-30C18XS-F0120	-R	1u
F0220	PF-15C18XS-F0220	-R	1u	PF-30C18XS-F0220	-R	1u
F0330	PF-15C18XS-F0330	-R	1u	PF-30C18XS-F0330	-R	1u
F0800	---	---	---	PF-30C18XS-F0800	-R	1u
F1600	---	---	---	PF-30C18XS-F1600	-R	1u

puriFlash® C18-HP

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PF5C18HP-250/P46	-R	1u	PF10C18HP-250/P46	-R	1u	PF15C18HP-250/P46	-R	1u
150 x 10.0mm	PF5C18HP-150/100	-R	1u	PF10C18HP-150/100	-R	1u	PF15C18HP-150/100	-R	1u
250 x 10.0mm	PF5C18HP-250/100	-R	1u	PF10C18HP-250/100	-R	1u	PF15C18HP-250/100	-R	1u
50 x 21.2mm	PF5C18HP-050/212	-R	1u	PF10C18HP-050/212	-R	1u	PF15C18HP-050/212	-R	1u
100 x 21.2mm	PF5C18HP-100/212	-R	1u	PF10C18HP-100/212	-R	1u	PF15C18HP-100/212	-R	1u
150 x 21.2mm	PF5C18HP-150/212	-R	1u	PF10C18HP-150/212	-R	1u	PF15C18HP-150/212	-R	1u
250 x 21.2mm	PF5C18HP-250/212	-R	1u	PF10C18HP-250/212	-R	1u	PF15C18HP-250/212	-R	1u
50 x 30.0mm	PF5C18HP-050/300	-R	1u	PF10C18HP-050/300	-R	1u	PF15C18HP-050/300	-R	1u
100 x 30.0mm	PF5C18HP-100/300	-R	1u	PF10C18HP-100/300	-R	1u	PF15C18HP-100/300	-R	1u
150 x 30.0mm	PF5C18HP-150/300	-R	1u	PF10C18HP-150/300	-R	1u	PF15C18HP-150/300	-R	1u
250 x 30.0mm	PF5C18HP-250/300	-R	1u	PF10C18HP-250/300	-R	1u	PF15C18HP-250/300	-R	1u
50 x 50.0mm	PF5C18HP-050/500	-R	1u	PF10C18HP-050/500	-R	1u	PF15C18HP-050/500	-R	1u
250 x 50.0mm	PF5C18HP-250/500	-R	1u	PF10C18HP-250/500	-R	1u	PF15C18HP-250/500	-R	1u

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Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty	50µm	RFID	Qty
F0001	SC-15C18HP-F0001	-R	25u	- - -	-R	- - -	- - -	-R	- - -
F0004	PF-15C18HP-F0004	-R	4u	PF-30C18HP-F0004	-R	25u	PF-50C18HP-F0004	-R	25u
F0012	PF-15C18HP-F0012	-R	2u	PF-30C18HP-F0012	-R	4u	PF-50C18HP-F0012	-R	4u
F0025	PF-15C18HP-F0025	-R	1u	PF-30C18HP-F0025	-R	2u	PF-50C18HP-F0025	-R	2u
F0040	PF-15C18HP-F0040	-R	1u	PF-30C18HP-F0040	-R	1u	PF-50C18HP-F0040	-R	1u
F0080	PF-15C18HP-F0080	-R	1u	PF-30C18HP-F0080	-R	1u	PF-50C18HP-F0080	-R	1u
F0120	PF-15C18HP-F0120	-R	1u	PF-30C18HP-F0120	-R	1u	PF-50C18HP-F0120	-R	1u
F0220	PF-15C18HP-F0220	-R	1u	PF-30C18HP-F0220	-R	1u	PF-50C18HP-F0220	-R	1u
F0330	PF-15C18HP-F0330	-R	1u	PF-30C18HP-F0330	-R	1u	PF-50C18HP-F0330	-R	1u
F0800	- - -	- - -	- - -	PF-30C18HP-F0800	-R	1u	PF-50C18HP-F0800	-R	1u
F1600	- - -	- - -	- - -	PF-30C18HP-F1600	-R	1u	PF-50C18HP-F1600	-R	1u

puriFlash® C18-AQ

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PF5C18AQ-250/P46	-R	1u	PF10C18AQ-250/P46	-R	1u	PF15C18AQ-250/P46	-R	1u
150 x 10.0mm	PF5C18AQ-150/100	-R	1u	PF10C18AQ-150/100	-R	1u	PF15C18AQ-150/100	-R	1u
250 x 10.0mm	PF5C18AQ-250/100	-R	1u	PF10C18AQ-250/100	-R	1u	PF15C18AQ-250/100	-R	1u
50 x 21.2mm	PF5C18AQ-050/212	-R	1u	PF10C18AQ-050/212	-R	1u	PF15C18AQ-050/212	-R	1u
100 x 21.2mm	PF5C18AQ-100/212	-R	1u	PF10C18AQ-100/212	-R	1u	PF15C18AQ-100/212	-R	1u
150 x 21.2mm	PF5C18AQ-150/212	-R	1u	PF10C18AQ-150/212	-R	1u	PF15C18AQ-150/212	-R	1u
250 x 21.2mm	PF5C18AQ-250/212	-R	1u	PF10C18AQ-250/212	-R	1u	PF15C18AQ-250/212	-R	1u
50 x 30.0mm	PF5C18AQ-050/300	-R	1u	PF10C18AQ-050/300	-R	1u	PF15C18AQ-050/300	-R	1u
100 x 30.0mm	PF5C18AQ-100/300	-R	1u	PF10C18AQ-100/300	-R	1u	PF15C18AQ-100/300	-R	1u
150 x 30.0mm	PF5C18AQ-150/300	-R	1u	PF10C18AQ-150/300	-R	1u	PF15C18AQ-150/300	-R	1u
250 x 30.0mm	PF5C18AQ-250/300	-R	1u	PF10C18AQ-250/300	-R	1u	PF15C18AQ-250/300	-R	1u
50 x 50.0mm	PF5C18AQ-050/500	-R	1u	PF10C18AQ-050/500	-R	1u	PF15C18AQ-050/500	-R	1u
250 x 50.0mm	PF5C18AQ-250/500	-R	1u	PF10C18AQ-250/500	-R	1u	PF15C18AQ-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0001	SC-15C18AQ-F0001	-R	25u	- - -	-R	- - -
F0004	PF-15C18AQ-F0004	-R	4u	PF-30C18AQ-F0004	-R	4u
F0012	PF-15C18AQ-F0012	-R	2u	PF-30C18AQ-F0012	-R	2u
F0025	PF-15C18AQ-F0025	-R	1u	PF-30C18AQ-F0025	-R	1u
F0040	PF-15C18AQ-F0040	-R	1u	PF-30C18AQ-F0040	-R	1u
F0080	PF-15C18AQ-F0080	-R	1u	PF-30C18AQ-F0080	-R	1u
F0120	PF-15C18AQ-F0120	-R	1u	PF-30C18AQ-F0120	-R	1u
F0220	PF-15C18AQ-F0220	-R	1u	PF-30C18AQ-F0220	-R	1u
F0330	PF-15C18AQ-F0330	-R	1u	PF-30C18AQ-F0330	-R	1u
F0800	- - -	- - -	- - -	PF-30C18AQ-F0800	-R	1u
F1600	- - -	- - -	- - -	PF-30C18AQ-F1600	-R	1u

puriFlash® RP-AQ

LC Preparative Columns	15µm	RFID	Qty
250 x 4.6mm	PF15RPAQ-250/P46	-R	1u
150 x 10.0mm	PF15RPAQ-150/100	-R	1u
250 x 10.0mm	PF15RPAQ-250/100	-R	1u
50 x 21.2mm	PF15RPAQ-050/212	-R	1u
100 x 21.2mm	PF15RPAQ-100/212	-R	1u
150 x 21.2mm	PF15RPAQ-150/212	-R	1u
250 x 21.2mm	PF15RPAQ-250/212	-R	1u
50 x 30.0mm	PF15RPAQ-050/300	-R	1u
100 x 30.0mm	PF15RPAQ-100/300	-R	1u
150 x 30.0mm	PF15RPAQ-150/300	-R	1u
250 x 30.0mm	PF15RPAQ-250/300	-R	1u
50 x 50.0mm	PF15RPAQ-050/500	-R	1u
250 x 50.0mm	PF15RPAQ-250/500	-R	1u

RFID Columns
add [-R] at the end of P/N

puriFlash® RP-AQ

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0001	SC-15RPAQ-F0001	-R	25u	---	-R	---
F0004	PF-15RPAQ-F0004	-R	4u	PF-30RPAQ-F0004	-R	4u
F0012	PF-15RPAQ-F0012	-R	2u	PF-30RPAQ-F0012	-R	2u
F0025	PF-15RPAQ-F0025	-R	1u	PF-30RPAQ-F0025	-R	1u
F0040	PF-15RPAQ-F0040	-R	1u	PF-30RPAQ-F0040	-R	1u
F0080	PF-15RPAQ-F0080	-R	1u	PF-30RPAQ-F0080	-R	1u
F0120	PF-15RPAQ-F0120	-R	1u	PF-30RPAQ-F0120	-R	1u
F0220	PF-15RPAQ-F0220	-R	1u	PF-30RPAQ-F0220	-R	1u
F0330	PF-15RPAQ-F0330	-R	1u	PF-30RPAQ-F0330	-R	1u
F0800	---	---	---	PF-30RPAQ-F0800	-R	1u
F1600	---	---	---	PF-30RPAQ-F1600	-R	1u

puriFlash® MM1

Flash Columns	50µm	RFID	Qty
F0004	PF-50MM1-F0004	-R	4u
F0012	PF-50MM1-F0012	-R	2u
F0025	PF-50MM1-F0025	-R	1u
F0040	PF-50MM1-F0040	-R	1u
F0080	PF-50MM1-F0080	-R	1u
F0120	PF-50MM1-F0120	-R	1u
F0220	PF-50MM1-F0220	-R	1u
F0330	PF-50MM1-F0330	-R	1u
F0800	PF-50MM1-F0800	-R	1u
F1600	PF-50MM1-F1600	-R	1u

RFID Columns
add [-R] at the end of P/N

puriFlash® CN

Flash Columns	15µm	RFID	Qty	50µm	RFID	Qty
F0004	PF-15CN-F0004	-R	4u	PF-50CN-F0004	-R	4u
F0012	PF-15CN-F0012	-R	2u	PF-50CN-F0012	-R	2u
F0025	PF-15CN-F0025	-R	1u	PF-50CN-F0025	-R	1u
F0040	PF-15CN-F0040	-R	1u	PF-50CN-F0040	-R	1u
F0080	PF-15CN-F0080	-R	1u	PF-50CN-F0080	-R	1u
F0120	PF-15CN-F0120	-R	1u	PF-50CN-F0120	-R	1u
F0220	PF-15CN-F0220	-R	1u	PF-50CN-F0220	-R	1u
F0330	PF-15CN-F0330	-R	1u	PF-50CN-F0330	-R	1u
F0800	---	---	---	PF-50CN-F0800	-R	1u
F1600	---	---	---	PF-50CN-F1600	-R	1u

puriFlash® DIOL

LC Preparative Columns	6µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PF6OH-250/P46	-R	1u	PF10OH-250/P46	-R	1u	PF15OH-250/P46	-R	1u
150 x 10.0mm	---	---	---	PF10OH-150/100	-R	1u	PF15OH-150/100	-R	1u
250 x 10.0mm	---	---	---	PF10OH-250/100	-R	1u	PF15OH-250/100	-R	1u
50 x 21.2mm	---	---	---	PF10OH-050/212	-R	1u	PF15OH-050/212	-R	1u
100 x 21.2mm	---	---	---	PF10OH-100/212	-R	1u	PF15OH-100/212	-R	1u
150 x 21.2mm	---	---	---	PF10OH-150/212	-R	1u	PF15OH-150/212	-R	1u
250 x 21.2mm	---	---	---	PF10OH-250/212	-R	1u	PF15OH-250/212	-R	1u
50 x 30.0mm	---	---	---	PF10OH-050/300	-R	1u	PF15OH-050/300	-R	1u
100 x 30.0mm	---	---	---	PF10OH-100/300	-R	1u	PF15OH-100/300	-R	1u
150 x 30.0mm	---	---	---	PF10OH-150/300	-R	1u	PF15OH-150/300	-R	1u
250 x 30.0mm	---	---	---	PF10OH-250/300	-R	1u	PF15OH-250/300	-R	1u
50 x 50.0mm	---	---	---	PF10OH-050/500	-R	1u	PF15OH-050/500	-R	1u
250 x 50.0mm	---	---	---	PF10OH-250/500	-R	1u	PF15OH-250/500	-R	1u

puriFlash® DIOL

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty	50µm	RFID	Qty
F0004	PF-15DIOL-F0004	-R	4u	PF-30DIOL-F0004	-R	4u	PF-50DIOL-F0004	-R	4u
F0012	PF-15DIOL-F0012	-R	2u	PF-30DIOL-F0012	-R	2u	PF-50DIOL-F0012	-R	2u
F0025	PF-15DIOL-F0025	-R	1u	PF-30DIOL-F0025	-R	1u	PF-50DIOL-F0025	-R	1u
F0040	PF-15DIOL-F0040	-R	1u	PF-30DIOL-F0040	-R	1u	PF-50DIOL-F0040	-R	1u
F0080	PF-15DIOL-F0080	-R	1u	PF-30DIOL-F0080	-R	1u	PF-50DIOL-F0080	-R	1u
F0120	PF-15DIOL-F0120	-R	1u	PF-30DIOL-F0120	-R	1u	PF-50DIOL-F0120	-R	1u
F0220	PF-15DIOL-F0220	-R	1u	PF-30DIOL-F0220	-R	1u	PF-50DIOL-F0220	-R	1u
F0330	PF-15DIOL-F0330	-R	1u	PF-30DIOL-F0330	-R	1u	PF-50DIOL-F0330	-R	1u
F0800	---	---	---	PF-30DIOL-F0800	-R	1u	PF-50DIOL-F0800	-R	1u
F1600	---	---	---	PF-30DIOL-F1600	-R	1u	PF-50DIOL-F1600	-R	1u

puriFlash® IR-SI

Flash Columns	20µm	RFID	Qty	50µm	RFID	Qty
F0004	IR-20SI-F0004	-R	40u	IR-50SI-F0004	-R	40u
F0012	IR-20SI-F0012	-R	30u	IR-50SI-F0012	-R	30u
F0025	IR-20SI-F0025	-R	25u	IR-50SI-F0025	-R	25u
F0040	IR-20SI-F0040	-R	20u	IR-50SI-F0040	-R	20u
F0080	IR-20SI-F0080	-R	10u	IR-50SI-F0080	-R	10u
F0120	IR-20SI-F0120	-R	8u	IR-50SI-F0120	-R	8u
F0220	IR-20SI-F0220	-R	4u	IR-50SI-F0220	-R	4u
F0330	IR-20SI-F0330	-R	4u	IR-50SI-F0330	-R	4u
F0800	IR-20SI-F0800	-R	1u	IR-50SI-F0800	-R	1u
F1600	IR-20SI-F1600	-R	1u	IR-50SI-F1600	-R	1u

RFID

RFID Columns
add [-R] at the end of P/N

puriFlash® SIHP

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PF5SIHP-250/P46	-R	1u	PF10SIHP-250/P46	-R	1u	PF15SIHP-250/P46	-R	1u
150 x 10.0mm	PF5SIHP-150/100	-R	1u	PF10SIHP-150/100	-R	1u	PF15SIHP-150/100	-R	1u
250 x 10.0mm	PF5SIHP-250/100	-R	1u	PF10SIHP-250/100	-R	1u	PF15SIHP-250/100	-R	1u
50 x 21.2mm	PF5SIHP-050/212	-R	1u	PF10SIHP-050/212	-R	1u	PF15SIHP-050/212	-R	1u
100 x 21.2mm	PF5SIHP-100/212	-R	1u	PF10SIHP-100/212	-R	1u	PF15SIHP-100/212	-R	1u
150 x 21.2mm	PF5SIHP-150/212	-R	1u	PF10SIHP-150/212	-R	1u	PF15SIHP-150/212	-R	1u
250 x 21.2mm	PF5SIHP-250/212	-R	1u	PF10SIHP-250/212	-R	1u	PF15SIHP-250/212	-R	1u
50 x 30.0mm	PF5SIHP-050/300	-R	1u	PF10SIHP-050/300	-R	1u	PF15SIHP-050/300	-R	1u
100 x 30.0mm	PF5SIHP-100/300	-R	1u	PF10SIHP-100/300	-R	1u	PF15SIHP-100/300	-R	1u
150 x 30.0mm	PF5SIHP-150/300	-R	1u	PF10SIHP-150/300	-R	1u	PF15SIHP-150/300	-R	1u
250 x 30.0mm	PF5SIHP-250/300	-R	1u	PF10SIHP-250/300	-R	1u	PF15SIHP-250/300	-R	1u
50 x 50.0mm	PF5SIHP-050/500	-R	1u	PF10SIHP-050/500	-R	1u	PF15SIHP-050/500	-R	1u
250 x 50.0mm	PF5SIHP-250/500	-R	1u	PF10SIHP-250/500	-R	1u	PF15SIHP-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty	50µm	RFID	Qty
F0001	SC-15SIHP-F0001	-R	50u	---	-R	---	---	-R	---
F0004	PF-15SIHP-F0004	-R	20u	PF-30SIHP-F0004	-R	40u	PF-50SIHP-F0004	-R	40u
F0012	PF-15SIHP-F0012	-R	20u	PF-30SIHP-F0012	-R	30u	PF-50SIHP-F0012	-R	30u
F0025	PF-15SIHP-F0025	-R	12u	PF-30SIHP-F0025	-R	25u	PF-50SIHP-F0025	-R	25u
F0040	PF-15SIHP-F0040	-R	12u	PF-30SIHP-F0040	-R	20u	PF-50SIHP-F0040	-R	20u
F0080	PF-15SIHP-F0080	-R	4u	PF-30SIHP-F0080	-R	10u	PF-50SIHP-F0080	-R	10u
F0120	PF-15SIHP-F0120	-R	4u	PF-30SIHP-F0120	-R	8u	PF-50SIHP-F0120	-R	8u
F0220	PF-15SIHP-F0220	-R	2u	PF-30SIHP-F0220	-R	4u	PF-50SIHP-F0220	-R	4u
F0330	PF-15SIHP-F0330	-R	2u	PF-30SIHP-F0330	-R	4u	PF-50SIHP-F0330	-R	4u
F0800	---	---	---	PF-30SIHP-F0800	-R	1u	PF-50SIHP-F0800	-R	1u
F1600	---	---	---	PF-30SIHP-F1600	-R	1u	PF-50SIHP-F1600	-R	1u

Back to SUMMARY

puriFlash® SIHP - Jumbo pack

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty	50µm	RFID	Qty
F0004	PF-15SIHP-JP-F0004	-R	80 u	PF-30SIHP-JP-F0004	-R	160u	PF-50SIHP-JP-F0004	-R	160u
F0012	PF-15SIHP-JP-F0012	-R	80 u	PF-30SIHP-JP-F0012	-R	120u	PF-50SIHP-JP-F0012	-R	120u
F0025	PF-15SIHP-JP-F0025	-R	48 u	PF-30SIHP-JP-F0025	-R	100u	PF-50SIHP-JP-F0025	-R	100u
F0040	PF-15SIHP-JP-F0040	-R	48 u	PF-30SIHP-JP-F0040	-R	80u	PF-50SIHP-JP-F0040	-R	80u
F0080	PF-15SIHP-JP-F0080	-R	32 u	PF-30SIHP-JP-F0080	-R	40u	PF-50SIHP-JP-F0080	-R	40u
F0120	PF-15SIHP-JP-F0120	-R	32 u	PF-30SIHP-JP-F0120	-R	32u	PF-50SIHP-JP-F0120	-R	32u
F0220	PF-15SIHP-JP-F0220	-R	8 u	PF-30SIHP-JP-F0220	-R	16u	PF-50SIHP-JP-F0220	-R	16u
F0330	PF-15SIHP-JP-F0330	-R	8 u	PF-30SIHP-JP-F0330	-R	16u	PF-50SIHP-JP-F0330	-R	16u
F0800	---	---	---	PF-30SIHP-JP-F0800	-R	4u	PF-50SIHP-JP-F0800	-R	4u
F1600	---	---		PF-30SIHP-JP-F1600	-R	4u	PF-50SIHP-JP-F1600	-R	4u

puriFlash® SIHC

Flash Columns	15µm	RFID	Qty	25µm	RFID	Qty	50µm	RFID	Qty
F0001	SC-15SIHC-F0001	-R	50u	---	---	---	---	---	---
F0004	PF-15SIHC-F0004	-R	20u	PF-25SIHC-F0004	-R	40u	PF-50SIHC-F0004	-R	40u
F0012	PF-15SIHC-F0012	-R	20u	PF-25SIHC-F0012	-R	30u	PF-50SIHC-F0012	-R	30u
F0025	PF-15SIHC-F0025	-R	12u	PF-25SIHC-F0025	-R	25u	PF-50SIHC-F0025	-R	25u
F0040	PF-15SIHC-F0040	-R	12u	PF-25SIHC-F0040	-R	20u	PF-50SIHC-F0040	-R	20u
F0080	PF-15SIHC-F0080	-R	4u	PF-25SIHC-F0080	-R	10u	PF-50SIHC-F0080	-R	10u
F0120	PF-15SIHC-F0120	-R	4u	PF-25SIHC-F0120	-R	8u	PF-50SIHC-F0120	-R	8u
F0220	PF-15SIHC-F0220	-R	2u	PF-25SIHC-F0220	-R	4u	PF-50SIHC-F0220	-R	4u
F0330	PF-15SIHC-F0330	-R	2u	PF-25SIHC-F0330	-R	4u	PF-50SIHC-F0330	-R	4u
F0800	---	---	---	PF-25SIHC-F0800	-R	1u	PF-50SIHC-F0800	-R	1u
F1600	---	---	---	PF-25SIHC-F1600	-R	1u	PF-50SIHC-F1600	-R	1u

puriFlash® SIHC - Jumbo pack

Flash Columns	15µm	RFID	Qty	25µm	RFID	Qty	50µm	RFID	Qty
F0004	PF-15SIHC-JP-F0004	-R	80u	PF-25SIHC-JP-F0004	-R	160u	PF-50SIHC-JP-F0004	-R	160u
F0012	PF-15SIHC-JP-F0012	-R	80u	PF-25SIHC-JP-F0012	-R	120u	PF-50SIHC-JP-F0012	-R	120u
F0025	PF-15SIHC-JP-F0025	-R	48u	PF-25SIHC-JP-F0025	-R	100u	PF-50SIHC-JP-F0025	-R	100u
F0040	PF-15SIHC-JP-F0040	-R	48u	PF-25SIHC-JP-F0040	-R	80u	PF-50SIHC-JP-F0040	-R	80u
F0080	PF-15SIHC-JP-F0080	-R	16u	PF-25SIHC-JP-F0080	-R	40u	PF-50SIHC-JP-F0080	-R	40u
F0120	PF-15SIHC-JP-F0120	-R	16u	PF-25SIHC-JP-F0120	-R	32u	PF-50SIHC-JP-F0120	-R	32u
F0220	PF-15SIHC-JP-F0220	-R	8u	PF-25SIHC-JP-F0220	-R	16u	PF-50SIHC-JP-F0220	-R	16u
F0330	PF-15SIHC-JP-F0330	-R	8u	PF-25SIHC-JP-F0330	-R	16u	PF-50SIHC-JP-F0330	-R	16u
F0800	---	---	---	PF-25SIHC-JP-F0800	-R	4u	PF-50SIHC-JP-F0800	-R	4u
F1600	---	---	---	PF-25SIHC-JP-F1600	-R	4u	PF-50SIHC-JP-F1600	-R	4u

puriFlash® AGNO3

Flash Columns	50µm	RFID	Qty
F0004	PF-50SIAG-F0004	-R	25u
F0012	PF-50SIAG-F0012	-R	12u
F0025	PF-50SIAG-F0025	-R	12u
F0040	PF-50SIAG-F0040	-R	8u
F0080	PF-50SIAG-F0080	-R	4u
F0120	PF-50SIAG-F0120	-R	2u
F0220	PF-50SIAG-F0220	-R	1u
F0330	PF-50SIAG-F0330	-R	1u
F0800	PF-50SIAG-F0800	-R	1u
F1600	PF-50SIAG-F1600	-R	1u

RFID Columns
add [-R] at the end of P/N

puriFlash® NH2

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PF5NH2-250/P46	-R	1u	PF10NH2-250/P46	-R	1u	PF15NH2-250/P46	-R	1u
150 x 10.0mm	PF5NH2-150/100	-R	1u	PF10NH2-150/100	-R	1u	PF15NH2-150/100	-R	1u
250 x 10.0mm	PF5NH2-250/100	-R	1u	PF10NH2-250/100	-R	1u	PF15NH2-250/100	-R	1u
50 x 21.2mm	PF5NH2-050/212	-R	1u	PF10NH2-050/212	-R	1u	PF15NH2-050/212	-R	1u
100 x 21.2mm	PF5NH2-100/212	-R	1u	PF10NH2-100/212	-R	1u	PF15NH2-100/212	-R	1u
150 x 21.2mm	PF5NH2-150/212	-R	1u	PF10NH2-150/212	-R	1u	PF15NH2-150/212	-R	1u
250 x 21.2mm	PF5NH2-250/212	-R	1u	PF10NH2-250/212	-R	1u	PF15NH2-250/212	-R	1u
50 x 30.0mm	PF5NH2-050/300	-R	1u	PF10NH2-050/300	-R	1u	PF15NH2-050/300	-R	1u
100 x 30.0mm	PF5NH2-100/300	-R	1u	PF10NH2-100/300	-R	1u	PF15NH2-100/300	-R	1u
150 x 30.0mm	PF5NH2-150/300	-R	1u	PF10NH2-150/300	-R	1u	PF15NH2-150/300	-R	1u
250 x 30.0mm	PF5NH2-250/300	-R	1u	PF10NH2-250/300	-R	1u	PF15NH2-250/300	-R	1u
50 x 50.0mm	PF5NH2-050/500	-R	1u	PF10NH2-050/500	-R	1u	PF15NH2-050/500	-R	1u
250 x 50.0mm	PF5NH2-250/500	-R	1u	PF10NH2-250/500	-R	1u	PF15NH2-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty	50µm	RFID	Qty
F0004	PF-15NH2-F0004	-R	4u	PF-30NH2-F0004	-R	4u	PF-50NH2-F0004	-R	4u
F0012	PF-15NH2-F0012	-R	2u	PF-30NH2-F0012	-R	2u	PF-50NH2-F0012	-R	2u
F0025	PF-15NH2-F0025	-R	1u	PF-30NH2-F0025	-R	1u	PF-50NH2-F0025	-R	1u
F0040	PF-15NH2-F0040	-R	1u	PF-30NH2-F0040	-R	1u	PF-50NH2-F0040	-R	1u
F0080	PF-15NH2-F0080	-R	1u	PF-30NH2-F0080	-R	1u	PF-50NH2-F0080	-R	1u
F0120	PF-15NH2-F0120	-R	1u	PF-30NH2-F0120	-R	1u	PF-50NH2-F0120	-R	1u
F0220	PF-15NH2-F0220	-R	1u	PF-30NH2-F0220	-R	1u	PF-50NH2-F0220	-R	1u
F0330	PF-15NH2-F0330	-R	1u	PF-30NH2-F0330	-R	1u	PF-50NH2-F0330	-R	1u
F0800	---	---	---	PF-30NH2-F0800	-R	1u	PF-50NH2-F0800	-R	1u
F1600	---	---	---	PF-30NH2-F1600	-R	1u	PF-50NH2-F1600	-R	1u

puriFlash® NH2HC

Flash Columns	50µm	RFID	Qty
F0004	PF-50NH2HC-F0004	-R	4u
F0012	PF-50NH2HC-F0012	-R	2u
F0025	PF-50NH2HC-F0025	-R	1u
F0040	PF-50NH2HC-F0040	-R	1u
F0080	PF-50NH2HC-F0080	-R	1u
F0120	PF-50NH2HC-F0120	-R	1u
F0220	PF-50NH2HC-F0220	-R	1u
F0330	PF-50NH2HC-F0330	-R	1u
F0800	PF-50NH2HC-F0800	-R	1u
F1600	PF-50NH2HC-F1600	-R	1u

puriFlash® SCX

Flash Columns	50µm	RFID	Qty
F0004	PF-50SCX-F0004	-R	4u
F0012	PF-50SCX-F0012	-R	2u
F0025	PF-50SCX-F0025	-R	1u
F0040	PF-50SCX-F0040	-R	1u
F0080	PF-50SCX-F0080	-R	1u
F0120	PF-50SCX-F0120	-R	1u
F0220	PF-50SCX-F0220	-R	1u
F0330	PF-50SCX-F0330	-R	1u
F0800	PF-50SCX-F0800	-R	1u
F1600	PF-50SCX-F1600	-R	1u

puriFlash® SAX

Flash Columns	50µm	RFID	Qty
F0004	PF-50SAX-F0004	-R	4u
F0012	PF-50SAX-F0012	-R	2u
F0025	PF-50SAX-F0025	-R	1u
F0040	PF-50SAX-F0040	-R	1u
F0080	PF-50SAX-F0080	-R	1u
F0120	PF-50SAX-F0120	-R	1u
F0220	PF-50SAX-F0220	-R	1u
F0330	PF-50SAX-F0330	-R	1u
F0800	PF-50SAX-F0800	-R	1u
F1600	PF-50SAX-F1600	-R	1u

puriFlash® X (Pure PSDVB)

Flash Columns	40µm	RFID	Qty
F0004	PF-X-F0004	-R	4u
F0012	PF-X-F0012	-R	2u
F0025	PF-X-F0025	-R	1u
F0040	PF-X-F0040	-R	1u
F0080	PF-X-F0080	-R	1u
F0120	PF-X-F0120	-R	1u
F0220	PF-X-F0220	-R	1u
F0330	PF-X-F0330	-R	1u
F0800	PF-X-F0800	-R	1u
F1600	PF-X-F1600	-R	1u

puriFlash® P6 (Polyamide 6)

Flash Columns		100µm	RFID	Qty
	F0004	PF-100P6-F0004	-R	4u
	F0012	PF-100P6-F0012	-R	2u
	F0025	PF-100P6-F0025	-R	2u
	F0040	PF-100P6-F0040	-R	2u
	F0080	PF-100P6-F0080	-R	1u
	F0120	PF-100P6-F0120	-R	1u
	F0220	PF-100P6-F0220	-R	1u
	F0330	PF-100P6-F0330	-R	1u
	F0800	PF-100P6-F0800	-R	1u
	F1600	PF-100P6-F1600	-R	1u

puriFlash® ALUMINA N (Neutral Alumina)

Flash Columns		32 / 63µm	RFID	Qty
	F0001	SC-ALN-F0001	-R	25u
	F0004	PF-ALN-F0004	-R	8u
	F0012	PF-ALN-F0012	-R	4u
	F0025	PF-ALN-F0025	-R	4u
	F0040	PF-ALN-F0040	-R	4u
	F0080	PF-ALN-F0080	-R	2u
	F0120	PF-ALN-F0120	-R	2u
	F0220	PF-ALN-F0220	-R	2u
	F0330	PF-ALN-F0330	-R	1u
	F0800	PF-ALN-F0800	-R	1u
	F1600	PF-ALN-F1600	-R	1u

puriFlash® ALUMINA B (Basic Alumina)

Flash Columns		32 / 63µm	RFID	Qty
	F0004	PF-ALB-F0004	-R	8u
	F0012	PF-ALB-F0012	-R	4u
	F0025	PF-ALB-F0025	-R	4u
	F0040	PF-ALB-F0040	-R	4u
	F0080	PF-ALB-F0080	-R	2u
	F0120	PF-ALB-F0120	-R	2u
	F0220	PF-ALB-F0220	-R	2u
	F0330	PF-ALB-F0330	-R	1u
	F0800	PF-ALB-F0800	-R	1u
	F1600	PF-ALB-F1600	-R	1u

puriFlash® ACTIVATED CARBON

Flash Columns		420 / 840µm	RFID	Qty
	F0004	PF-AC-F0004	-R	16u
	F0012	PF-AC-F0012	-R	8u
	F0025	PF-AC-F0025	-R	8u
	F0040	PF-AC-F0040	-R	8u
	F0080	PF-AC-F0080	-R	4u
	F0120	PF-AC-F0120	-R	4u
	F0220	PF-AC-F0220	-R	4u
	F0330	PF-AC-F0330	-R	2u
	F0800	PF-AC-F0800	-R	1u
	F1600	PF-AC-F1600	-R	1u

puriFlash® Chiral IA

Flash Columns		20µm	RFID	Qty
	F0004	CT-20IA-F0004	-R	1u
	F0012	CT-20IA-F0012	-R	1u
	F0025	CT-20IA-F0025	-R	1u
	F0040	CT-20IA-F0040	-R	1u
	F0080	CT-20IA-F0080	-R	1u
	F0120	CT-20IA-F0120	-R	1u
	F0220	CT-20IA-F0220	-R	1u

puriFlash® Chiral IC

Flash Columns		20µm	RFID	Qty
	F0004	CT-20IC-F0004	-R	1u
	F0012	CT-20IC-F0012	-R	1u
	F0025	CT-20IC-F0025	-R	1u
	F0040	CT-20IC-F0040	-R	1u

puriFlash® Chiral ID

Flash Columns		20µm	RFID	Qty
	F0004	CT-20ID-F0004	-R	1u
	F0012	CT-20ID-F0012	-R	1u
	F0025	CT-20ID-F0025	-R	1u
	F0040	CT-20ID-F0040	-R	1u

puriFlash® Chiral OD-I

Flash Columns		20µm	RFID	Qty
	F0004	CT-20OD-F0004	-R	1u
	F0012	CT-20OD-F0012	-R	1u
	F0025	CT-20OD-F0025	-R	1u
	F0040	CT-20OD-F0040	-R	1u

RFID Columns
add [-R] at the end of P/N

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Uptisphere® Strategy™ C18-3

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	US5C183-250/P46	-R	1u	US10C183-250/P46	-R	1u	US15C183-250/P46	-R	1u
150 x 10.0mm	US5C183-150/100	-R	1u	US10C183-150/100	-R	1u	US15C183-150/100	-R	1u
250 x 10.0mm	US5C183-250/100	-R	1u	US10C183-250/100	-R	1u	US15C183-250/100	-R	1u
50 x 21.2mm	US5C183-050/212	-R	1u	US10C183-050/212	-R	1u	US15C183-050/212	-R	1u
100 x 21.2mm	US5C183-100/212	-R	1u	US10C183-100/212	-R	1u	US15C183-100/212	-R	1u
150 x 21.2mm	US5C183-150/212	-R	1u	US10C183-150/212	-R	1u	US15C183-150/212	-R	1u
250 x 21.2mm	US5C183-250/212	-R	1u	US10C183-250/212	-R	1u	US15C183-250/212	-R	1u
50 x 30.0mm	US5C183-050/300	-R	1u	US10C183-050/300	-R	1u	US15C183-050/300	-R	1u
100 x 30.0mm	US5C183-100/300	-R	1u	US10C183-100/300	-R	1u	US15C183-100/300	-R	1u
150 x 30.0mm	US5C183-150/300	-R	1u	US10C183-150/300	-R	1u	US15C183-150/300	-R	1u
250 x 30.0mm	US5C183-250/300	-R	1u	US10C183-250/300	-R	1u	US15C183-250/300	-R	1u
50 x 50.0mm	US5C183-050/500	-R	1u	US10C183-050/500	-R	1u	US15C183-050/500	-R	1u
250 x 50.0mm	US5C183-250/500	-R	1u	US10C183-250/500	-R	1u	US15C183-250/500	-R	1u

Uptisphere® Strategy™ C18-HQ

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	US5C18HQ-250/P46	-R	1u	US10C18HQ-250/P46	-R	1u	US15C18HQ-250/P46	-R	1u
150 x 10.0mm	US5C18HQ-150/100	-R	1u	US10C18HQ-150/100	-R	1u	US15C18HQ-150/100	-R	1u
250 x 10.0mm	US5C18HQ-250/100	-R	1u	US10C18HQ-250/100	-R	1u	US15C18HQ-250/100	-R	1u
50 x 21.2mm	US5C18HQ-050/212	-R	1u	US10C18HQ-050/212	-R	1u	US15C18HQ-050/212	-R	1u
100 x 21.2mm	US5C18HQ-100/212	-R	1u	US10C18HQ-100/212	-R	1u	US15C18HQ-100/212	-R	1u
150 x 21.2mm	US5C18HQ-150/212	-R	1u	US10C18HQ-150/212	-R	1u	US15C18HQ-150/212	-R	1u
250 x 21.2mm	US5C18HQ-250/212	-R	1u	US10C18HQ-250/212	-R	1u	US15C18HQ-250/212	-R	1u
50 x 30.0mm	US5C18HQ-050/300	-R	1u	US10C18HQ-050/300	-R	1u	US15C18HQ-050/300	-R	1u
100 x 30.0mm	US5C18HQ-100/300	-R	1u	US10C18HQ-100/300	-R	1u	US15C18HQ-100/300	-R	1u
150 x 30.0mm	US5C18HQ-150/300	-R	1u	US10C18HQ-150/300	-R	1u	US15C18HQ-150/300	-R	1u
250 x 30.0mm	US5C18HQ-250/300	-R	1u	US10C18HQ-250/300	-R	1u	US15C18HQ-250/300	-R	1u
50 x 50.0mm	US5C18HQ-050/500	-R	1u	US10C18HQ-050/500	-R	1u	US15C18HQ-050/500	-R	1u
250 x 50.0mm	US5C18HQ-250/500	-R	1u	US10C18HQ-250/500	-R	1u	US15C18HQ-250/500	-R	1u

Flash Columns	15µm	RFID	Qty
F0001	SC-15C18HQ-F0001	-R	25u
F0004	PF-15C18HQ-F0004	-R	4u
F0012	PF-15C18HQ-F0012	-R	2u
F0025	PF-15C18HQ-F0025	-R	1u
F0040	PF-15C18HQ-F0040	-R	1u
F0080	PF-15C18HQ-F0080	-R	1u
F0120	PF-15C18HQ-F0120	-R	1u
F0220	PF-15C18HQ-F0220	-R	1u
F0330	PF-15C18HQ-F0330	-R	1u

RFID Columns
add [-R] at the end of P/N

Uptisphere® Strategy™ C18-RP

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	US5RP-250/P46	-R	1u	US10RP-250/P46	-R	1u	US15RP-250/P46	-R	1u
150 x 10.0mm	US5RP-150/100	-R	1u	US10RP-150/100	-R	1u	US15RP-150/100	-R	1u
250 x 10.0mm	US5RP-250/100	-R	1u	US10RP-250/100	-R	1u	US15RP-250/100	-R	1u
50 x 21.2mm	US5RP-050/212	-R	1u	US10RP-050/212	-R	1u	US15RP-050/212	-R	1u
100 x 21.2mm	US5RP-100/212	-R	1u	US10RP-100/212	-R	1u	US15RP-100/212	-R	1u
150 x 21.2mm	US5RP-150/212	-R	1u	US10RP-150/212	-R	1u	US15RP-150/212	-R	1u
250 x 21.2mm	US5RP-250/212	-R	1u	US10RP-250/212	-R	1u	US15RP-250/212	-R	1u
50 x 30.0mm	US5RP-050/300	-R	1u	US10RP-050/300	-R	1u	US15RP-050/300	-R	1u
100 x 30.0mm	US5RP-100/300	-R	1u	US10RP-100/300	-R	1u	US15RP-100/300	-R	1u
150 x 30.0mm	US5RP-150/300	-R	1u	US10RP-150/300	-R	1u	US15RP-150/300	-R	1u
250 x 30.0mm	US5RP-250/300	-R	1u	US10RP-250/300	-R	1u	US15RP-250/300	-R	1u
50 x 50.0mm	US5RP-050/500	-R	1u	US10RP-050/500	-R	1u	US15RP-050/500	-R	1u
250 x 50.0mm	US5RP-250/500	-R	1u	US10RP-250/500	-R	1u	US15RP-250/500	-R	1u

Uptisphere® Strategy™ PHC4

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	US5PHC4-250/P46	-R	1u	US10PHC4-250/P46	-R	1u	US15PHC4-250/P46	-R	1u
150 x 10.0mm	US5PHC4-150/100	-R	1u	US10PHC4-150/100	-R	1u	US15PHC4-150/100	-R	1u
250 x 10.0mm	US5PHC4-250/100	-R	1u	US10PHC4-250/100	-R	1u	US15PHC4-250/100	-R	1u
50 x 21.2mm	US5PHC4-050/212	-R	1u	US10PHC4-050/212	-R	1u	US15PHC4-050/212	-R	1u
100 x 21.2mm	US5PHC4-100/212	-R	1u	US10PHC4-100/212	-R	1u	US15PHC4-100/212	-R	1u
150 x 21.2mm	US5PHC4-150/212	-R	1u	US10PHC4-150/212	-R	1u	US15PHC4-150/212	-R	1u
250 x 21.2mm	US5PHC4-250/212	-R	1u	US10PHC4-250/212	-R	1u	US15PHC4-250/212	-R	1u
50 x 30.0mm	US5PHC4-050/300	-R	1u	US10PHC4-050/300	-R	1u	US15PHC4-050/300	-R	1u
100 x 30.0mm	US5PHC4-100/300	-R	1u	US10PHC4-100/300	-R	1u	US15PHC4-100/300	-R	1u
150 x 30.0mm	US5PHC4-150/300	-R	1u	US10PHC4-150/300	-R	1u	US15PHC4-150/300	-R	1u
250 x 30.0mm	US5PHC4-250/300	-R	1u	US10PHC4-250/300	-R	1u	US15PHC4-250/300	-R	1u
50 x 50.0mm	US5PHC4-050/500	-R	1u	US10PHC4-050/500	-R	1u	US15PHC4-050/500	-R	1u
250 x 50.0mm	US5PHC4-250/500	-R	1u	US10PHC4-250/500	-R	1u	US15PHC4-250/500	-R	1u

Flash Columns	15µm	RFID	Qty
F0001	SC-15PHC4-F0001	-R	25u
F0004	PF-15PHC4-F0004	-R	4u
F0012	PF-15PHC4-F0012	-R	2u
F0025	PF-15PHC4-F0025	-R	1u
F0040	PF-15PHC4-F0040	-R	1u
F0080	PF-15PHC4-F0080	-R	1u
F0120	PF-15PHC4-F0120	-R	1u
F0220	PF-15PHC4-F0220	-R	1u
F0330	PF-15PHC4-F0330	-R	1u

RFID Columns
add [-R] at the end of P/N

Uptisphere® Strategy™ HILIC-HIT

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	US5HIT-250/P46	-R	1u	US10HIT-250/P46	-R	1u	US15HIT-250/P46	-R	1u
150 x 10.0mm	US5HIT-150/100	-R	1u	US10HIT-150/100	-R	1u	US15HIT-150/100	-R	1u
250 x 10.0mm	US5HIT-250/100	-R	1u	US10HIT-250/100	-R	1u	US15HIT-250/100	-R	1u
50 x 21.2mm	US5HIT-050/212	-R	1u	US10HIT-050/212	-R	1u	US15HIT-050/212	-R	1u
100 x 21.2mm	US5HIT-100/212	-R	1u	US10HIT-100/212	-R	1u	US15HIT-100/212	-R	1u
150 x 21.2mm	US5HIT-150/212	-R	1u	US10HIT-150/212	-R	1u	US15HIT-150/212	-R	1u
250 x 21.2mm	US5HIT-250/212	-R	1u	US10HIT-250/212	-R	1u	US15HIT-250/212	-R	1u
50 x 30.0mm	US5HIT-050/300	-R	1u	US10HIT-050/300	-R	1u	US15HIT-050/300	-R	1u
100 x 30.0mm	US5HIT-100/300	-R	1u	US10HIT-100/300	-R	1u	US15HIT-100/300	-R	1u
150 x 30.0mm	US5HIT-150/300	-R	1u	US10HIT-150/300	-R	1u	US15HIT-150/300	-R	1u
250 x 30.0mm	US5HIT-250/300	-R	1u	US10HIT-250/300	-R	1u	US15HIT-250/300	-R	1u
50 x 50.0mm	US5HIT-050/500	-R	1u	US10HIT-050/500	-R	1u	US15HIT-050/500	-R	1u
250 x 50.0mm	US5HIT-250/500	-R	1u	US10HIT-250/500	-R	1u	US15HIT-250/500	-R	1u

Uptisphere® Strategy™ HILIC-HIA

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	US5HIA-250/P46	-R	1u	US10HIA-250/P46	-R	1u	US15HIA-250/P46	-R	1u
150 x 10.0mm	US5HIA-150/100	-R	1u	US10HIA-150/100	-R	1u	US15HIA-150/100	-R	1u
250 x 10.0mm	US5HIA-250/100	-R	1u	US10HIA-250/100	-R	1u	US15HIA-250/100	-R	1u
50 x 21.2mm	US5HIA-050/212	-R	1u	US10HIA-050/212	-R	1u	US15HIA-050/212	-R	1u
100 x 21.2mm	US5HIA-100/212	-R	1u	US10HIA-100/212	-R	1u	US15HIA-100/212	-R	1u
150 x 21.2mm	US5HIA-150/212	-R	1u	US10HIA-150/212	-R	1u	US15HIA-150/212	-R	1u
250 x 21.2mm	US5HIA-250/212	-R	1u	US10HIA-250/212	-R	1u	US15HIA-250/212	-R	1u
50 x 30.0mm	US5HIA-050/300	-R	1u	US10HIA-050/300	-R	1u	US15HIA-050/300	-R	1u
100 x 30.0mm	US5HIA-100/300	-R	1u	US10HIA-100/300	-R	1u	US15HIA-100/300	-R	1u
150 x 30.0mm	US5HIA-150/300	-R	1u	US10HIA-150/300	-R	1u	US15HIA-150/300	-R	1u
250 x 30.0mm	US5HIA-250/300	-R	1u	US10HIA-250/300	-R	1u	US15HIA-250/300	-R	1u
50 x 50.0mm	US5HIA-050/500	-R	1u	US10HIA-050/500	-R	1u	US15HIA-050/500	-R	1u
250 x 50.0mm	US5HIA-250/500	-R	1u	US10HIA-250/500	-R	1u	US15HIA-250/500	-R	1u

Flash Columns		15µm	RFID	Qty
	F0001	SC-15HIA-F0001	-R	25u
	F0004	PF-15HIA-F0004	-R	4u
	F0012	PF-15HIA-F0012	-R	2u
	F0025	PF-15HIA-F0025	-R	1u
	F0040	PF-15HIA-F0040	-R	1u
	F0080	PF-15HIA-F0080	-R	1u
	F0120	PF-15HIA-F0120	-R	1u
	F0220	PF-15HIA-F0220	-R	1u
	F0330	PF-15HIA-F0330	-R	1u

RFID Columns
add [-R] at the end of P/N

Uptisphere® Strategy™ SI

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty
	250 x 4.6mm	US5SI-250/P46	-R	1u	US10SI-250/P46	-R	1u
	150 x 10.0mm	US5SI-150/100	-R	1u	US10SI-150/100	-R	1u
	250 x 10.0mm	US5SI-250/100	-R	1u	US10SI-250/100	-R	1u
	50 x 21.2mm	US5SI-050/212	-R	1u	US10SI-050/212	-R	1u
	100 x 21.2mm	US5SI-100/212	-R	1u	US10SI-100/212	-R	1u
	150 x 21.2mm	US5SI-150/212	-R	1u	US10SI-150/212	-R	1u
	250 x 21.2mm	US5SI-250/212	-R	1u	US10SI-250/212	-R	1u
	50 x 30.0mm	US5SI-050/300	-R	1u	US10SI-050/300	-R	1u
	100 x 30.0mm	US5SI-100/300	-R	1u	US10SI-100/300	-R	1u
	150 x 30.0mm	US5SI-150/300	-R	1u	US10SI-150/300	-R	1u
	250 x 30.0mm	US5SI-250/300	-R	1u	US10SI-250/300	-R	1u
	50 x 50.0mm	US5SI-050/500	-R	1u	US10SI-050/500	-R	1u
	250 x 50.0mm	US5SI-250/500	-R	1u	US10SI-250/500	-R	1u

Uptisphere® C18-NEC

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
	250 x 4.6mm	UP5NEC-250/P46	-R	1u	UP10NEC-250/P46	-R	1u	UP15NEC-250/P46	-R	1u
	150 x 10.0mm	UP5NEC-150/100	-R	1u	UP10NEC-150/100	-R	1u	UP15NEC-150/100	-R	1u
	250 x 10.0mm	UP5NEC-250/100	-R	1u	UP10NEC-250/100	-R	1u	UP15NEC-250/100	-R	1u
	50 x 21.2mm	UP5NEC-050/212	-R	1u	UP10NEC-050/212	-R	1u	UP15NEC-050/212	-R	1u
	100 x 21.2mm	UP5NEC-100/212	-R	1u	UP10NEC-100/212	-R	1u	UP15NEC-100/212	-R	1u
	150 x 21.2mm	UP5NEC-150/212	-R	1u	UP10NEC-150/212	-R	1u	UP15NEC-150/212	-R	1u
	250 x 21.2mm	UP5NEC-250/212	-R	1u	UP10NEC-250/212	-R	1u	UP15NEC-250/212	-R	1u
	50 x 30.0mm	UP5NEC-050/300	-R	1u	UP10NEC-050/300	-R	1u	UP15NEC-050/300	-R	1u
	100 x 30.0mm	UP5NEC-100/300	-R	1u	UP10NEC-100/300	-R	1u	UP15NEC-100/300	-R	1u
	150 x 30.0mm	UP5NEC-150/300	-R	1u	UP10NEC-150/300	-R	1u	UP15NEC-150/300	-R	1u
	250 x 30.0mm	UP5NEC-250/300	-R	1u	UP10NEC-250/300	-R	1u	UP15NEC-250/300	-R	1u
	50 x 50.0mm	UP5NEC-050/500	-R	1u	UP10NEC-050/500	-R	1u	UP15NEC-050/500	-R	1u
	250 x 50.0mm	UP5NEC-250/500	-R	1u	UP10NEC-250/500	-R	1u	UP15NEC-250/500	-R	1u

Uptisphere® CN

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
	250 x 4.6mm	UP5CN-250/P46	-R	1u	UP10CN-250/P46	-R	1u	UP15CN-250/P46	-R	1u
	150 x 10.0mm	UP5CN-150/100	-R	1u	UP10CN-150/100	-R	1u	UP15CN-150/100	-R	1u
	250 x 10.0mm	UP5CN-250/100	-R	1u	UP10CN-250/100	-R	1u	UP15CN-250/100	-R	1u
	50 x 21.2mm	UP5CN-050/212	-R	1u	UP10CN-050/212	-R	1u	UP15CN-050/212	-R	1u
	100 x 21.2mm	UP5CN-100/212	-R	1u	UP10CN-100/212	-R	1u	UP15CN-100/212	-R	1u
	150 x 21.2mm	UP5CN-150/212	-R	1u	UP10CN-150/212	-R	1u	UP15CN-150/212	-R	1u
	250 x 21.2mm	UP5CN-250/212	-R	1u	UP10CN-250/212	-R	1u	UP15CN-250/212	-R	1u
	50 x 30.0mm	UP5CN-050/300	-R	1u	UP10CN-050/300	-R	1u	UP15CN-050/300	-R	1u
	100 x 30.0mm	UP5CN-100/300	-R	1u	UP10CN-100/300	-R	1u	UP15CN-100/300	-R	1u
	150 x 30.0mm	UP5CN-150/300	-R	1u	UP10CN-150/300	-R	1u	UP15CN-150/300	-R	1u
	250 x 30.0mm	UP5CN-250/300	-R	1u	UP10CN-250/300	-R	1u	UP15CN-250/300	-R	1u
	50 x 50.0mm	UP5CN-050/500	-R	1u	UP10CN-050/500	-R	1u	UP15CN-050/500	-R	1u
	250 x 50.0mm	UP5CN-250/500	-R	1u	UP10CN-250/500	-R	1u	UP15CN-250/500	-R	1u

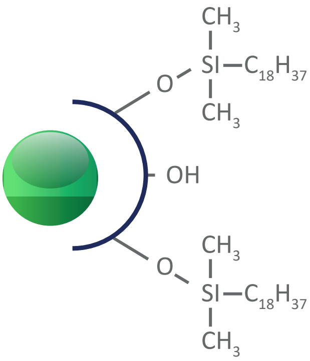
Selection Guide

Peptides	Polar	Mid & non-polar	Hydrophobic	Natural, Fatty Acids
< 40AA MW: up to 5KDa				
pH: 1.5 to 8.0	puriFlash® BIO 100 C18N	puriFlash® BIO 100 C18T	Screening Of puriFlash® BIO 100 (C18N /C18T)	
max. pH: 10		puriFlash® BIO 100 C18XS	puriFlash® BIO 100 C18XS	
< 80AA MW: up to 10KDa				
pH: 1.5 to 8.0	puriFlash® BIO 200 C18N	puriFlash® BIO 200 C18T	Screening Of puriFlash® BIO 200 (C18N /C18T)	
max. pH: 10		puriFlash® BIO 200 C18XS	puriFlash® BIO 200 C18XS	
< 160AA MW: up to 20KDa				
pH: 1.5 to 8.0	puriFlash® BIO 200 C18N	puriFlash® BIO 200 C8N	puriFlash® BIO 200 C8N	
< 80AA MW: up to 100KDa				
pH: 1.5 to 8.0				puriFlash® BIO 300 C4AQ

In-Process QA/QC of Peptides Synthesis	In-Process QA/QC of Peptides Synthesis puriFlash® BIO CS 2.6C18N => puriFlash® BIO 100 2.5C18N

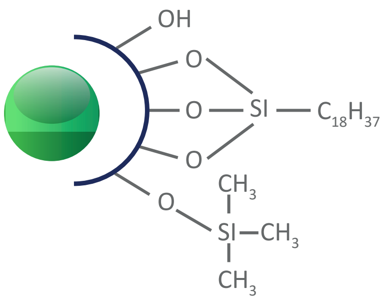
Notes:
Polar Peptides => Hilic mode using higher % of ACN 95 -to- 85%
Hydrophobic Peptides => it is useful to work with Water/ACN using a few % Formic Acid or 0.05% TFA ~ pH 2. In case your peptides have Lysine, Arginine etc. it is better to have an alki environment in the solvent. You need real buffer and according to buffer solubility it is to suggest to switch to MeOH instead of ACN. Usually step-Gradients (Ramp Gradients) or Pseudo-Isocratic or very flat gradients lead to highest capacity.

Peptides



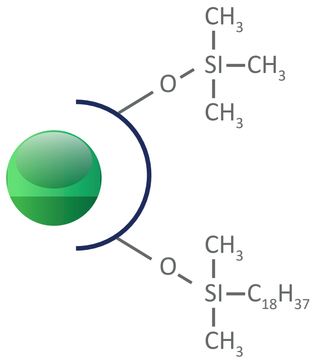
puriFlash® BIO C18-N

100Å - 320m²/g
2.5, 3.5, 5, 10, 15 & 30µm
C18 - octadecyl
Mono-functional
%C: 15.0
End-capping: None
pH stability: 1.5 to 8.0
Use mode: Reverse
In-Process QA/QC of Peptides Synthesis. Analysis & Purification of polar Peptides with les than 40AA & mw. up to 5KDa under pseudo hilic mode with 85% -to- 95% ACN. Analysis & Purification of hydrophobic Peptides with less than 40AA & mw. up to 5KDa.



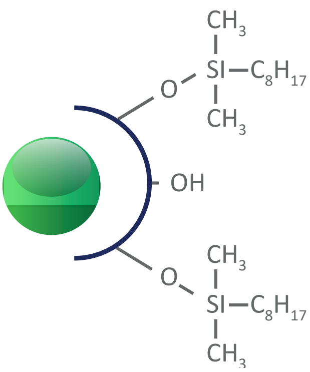
puriFlash® BIO C18-T

100Å - 320m²/g
2.5, 3.5, 5, 10, 15 & 30µm
C18 - octadecyl
Tri-functional
%C: 17.0
End-capping: One-step
pH stability: 1.5 to 8.0
Use mode: Reverse
Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with less than 40AA & mw. up to 5KDa.



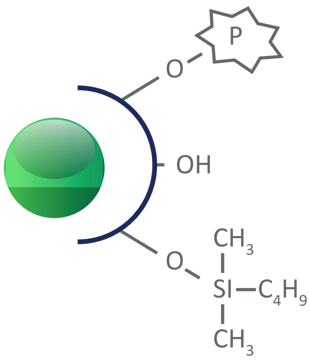
puriFlash® BIO C18-XS

100Å - 320m²/g
2.5, 3.5, 5, 10, 15 & 30µm
C18 - octadecyl
Mono-functional
%C: 17.0
End-capping: Multi-step
pH stability: 1.0 to 10.0
Use mode: Reverse
Analysis & Purification of mid & non-polar Peptides, hydrophobic Peptides with less than 40AA & mw. up to 5KDa under basic conditions up to pH: 10.0



puriFlash® BIO C8-N

200Å - 200m²/g
2.5, 3.5, 5, 10, 15 & 30µm
C18 - octadecyl
Mono-functional
%C: 7.0
End-capping: None
pH stability: 1.5 to 8.0
Use mode: Reverse
Analysis & Purification of polar Peptides less than 160AA & mw. up to 20KDa under pseudo hilic mode with 85% -to- 95% ACN. Analysis & Purification of hydrophobic Peptides with less than 80AA & mw. up to 10KDa.



puriFlash® BIO C4-AQ

300Å - 100m²/g
3.5, 5, 10, 15 & 30µm
C4 - butyl
Mono-functional
%C: 3.0
End-capping: Mixte
pH stability: 1.5 to 8.0
Use mode: Reverse
Analysis & Purification of natural Peptides, fatty acids with larger than 80AA & mw. up to 100KDa.

puriFlash® BIO 100 C18-N

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
	250 x 4.6mm	PFB5C18N-250/P46	-R	1u	PFB10C18N-250/P46	-R	1u	PFB15C18N-250/P46	-R	1u
	150 x 10.0mm	PFB5C18N-150/100	-R	1u	PFB10C18N-150/100	-R	1u	PFB15C18N-150/100	-R	1u
	250 x 10.0mm	PFB5C18N-250/100	-R	1u	PFB10C18N-250/100	-R	1u	PFB15C18N-250/100	-R	1u
	50 x 21.2mm	PFB5C18N-050/212	-R	1u	PFB10C18N-050/212	-R	1u	PFB15C18N-050/212	-R	1u
	100 x 21.2mm	PFB5C18N-100/212	-R	1u	PFB10C18N-100/212	-R	1u	PFB15C18N-100/212	-R	1u
	150 x 21.2mm	PFB5C18N-150/212	-R	1u	PFB10C18N-150/212	-R	1u	PFB15C18N-150/212	-R	1u
	250 x 21.2mm	PFB5C18N-250/212	-R	1u	PFB10C18N-250/212	-R	1u	PFB15C18N-250/212	-R	1u
	50 x 30.0mm	PFB5C18N-050/300	-R	1u	PFB10C18N-050/300	-R	1u	PFB15C18N-050/300	-R	1u
	100 x 30.0mm	PFB5C18N-100/300	-R	1u	PFB10C18N-100/300	-R	1u	PFB15C18N-100/300	-R	1u
	150 x 30.0mm	PFB5C18N-150/300	-R	1u	PFB10C18N-150/300	-R	1u	PFB15C18N-150/300	-R	1u
	250 x 30.0mm	PFB5C18N-250/300	-R	1u	PFB10C18N-250/300	-R	1u	PFB15C18N-250/300	-R	1u
	50 x 50.0mm	PFB5C18N-050/500	-R	1u	PFB10C18N-050/500	-R	1u	PFB15C18N-050/500	-R	1u
	250 x 50.0mm	PFB5C18N-250/500	-R	1u	PFB10C18N-250/500	-R	1u	PFB15C18N-250/500	-R	1u

Flash Columns		15µm	RFID	Qty	30µm	RFID	Qty
	F0004	PFB-15C18N-F0004	-R	4u	PFB-30C18N-F0004	-R	4u
	F0012	PFB-15C18N-F0012	-R	2u	PFB-30C18N-F0012	-R	2u
	F0025	PFB-15C18N-F0025	-R	1u	PFB-30C18N-F0025	-R	1u
	F0040	PFB-15C18N-F0040	-R	1u	PFB-30C18N-F0040	-R	1u
	F0080	PFB-15C18N-F0080	-R	1u	PFB-30C18N-F0080	-R	1u
	F0120	PFB-15C18N-F0120	-R	1u	PFB-30C18N-F0120	-R	1u
	F0220	PFB-15C18N-F0220	-R	1u	PFB-30C18N-F0220	-R	1u
	F0330	PFB-15C18N-F0330	-R	1u	PFB-30C18N-F0330	-R	1u
	F0800	---	---	---	PFB-30C18N-F0800	-R	1u
	F1600	---	---	---	PFB-30C18N-F1600	-R	1u

RFID

RFID Columns
add [-R] at the end of P/N

puriFlash® BIO 100 C18-T

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
	250 x 4.6mm	PFB5C18T-250/P46	-R	1u	PFB10C18T-250/P46	-R	1u	PFB15C18T-250/P46	-R	1u
	150 x 10.0mm	PFB5C18T-150/100	-R	1u	PFB10C18T-150/100	-R	1u	PFB15C18T-150/100	-R	1u
	250 x 10.0mm	PFB5C18T-250/100	-R	1u	PFB10C18T-250/100	-R	1u	PFB15C18T-250/100	-R	1u
	50 x 21.2mm	PFB5C18T-050/212	-R	1u	PFB10C18T-050/212	-R	1u	PFB15C18T-050/212	-R	1u
	100 x 21.2mm	PFB5C18T-100/212	-R	1u	PFB10C18T-100/212	-R	1u	PFB15C18T-100/212	-R	1u
	150 x 21.2mm	PFB5C18T-150/212	-R	1u	PFB10C18T-150/212	-R	1u	PFB15C18T-150/212	-R	1u
	250 x 21.2mm	PFB5C18T-250/212	-R	1u	PFB10C18T-250/212	-R	1u	PFB15C18T-250/212	-R	1u
	50 x 30.0mm	PFB5C18T-050/300	-R	1u	PFB10C18T-050/300	-R	1u	PFB15C18T-050/300	-R	1u
	100 x 30.0mm	PFB5C18T-100/300	-R	1u	PFB10C18T-100/300	-R	1u	PFB15C18T-100/300	-R	1u
	150 x 30.0mm	PFB5C18T-150/300	-R	1u	PFB10C18T-150/300	-R	1u	PFB15C18T-150/300	-R	1u
	250 x 30.0mm	PFB5C18T-250/300	-R	1u	PFB10C18T-250/300	-R	1u	PFB15C18T-250/300	-R	1u
	50 x 50.0mm	PFB5C18T-050/500	-R	1u	PFB10C18T-050/500	-R	1u	PFB15C18T-050/500	-R	1u
	250 x 50.0mm	PFB5C18T-250/500	-R	1u	PFB10C18T-250/500	-R	1u	PFB15C18T-250/500	-R	1u

Flash Columns		15µm	RFID	Qty	30µm	RFID	Qty
	F0004	PFB-15C18T-F0004	-R	4u	PFB-30C18T-F0004	-R	4u
	F0012	PFB-15C18T-F0012	-R	2u	PFB-30C18T-F0012	-R	2u
	F0025	PFB-15C18T-F0025	-R	1u	PFB-30C18T-F0025	-R	1u
	F0040	PFB-15C18T-F0040	-R	1u	PFB-30C18T-F0040	-R	1u
	F0080	PFB-15C18T-F0080	-R	1u	PFB-30C18T-F0080	-R	1u
	F0120	PFB-15C18T-F0120	-R	1u	PFB-30C18T-F0120	-R	1u
	F0220	PFB-15C18T-F0220	-R	1u	PFB-30C18T-F0220	-R	1u
	F0330	PFB-15C18T-F0330	-R	1u	PFB-30C18T-F0330	-R	1u
	F0800	---	---	---	PFB-30C18T-F0800	-R	1u
	F1600	---	---	---	PFB-30C18T-F1600	-R	1u

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puriFlash® BIO 100 C18-XS

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
	250 x 4.6mm	PFB5C18XS-250/P46	-R	1u	PFB10C18XS-250/P46	-R	1u	PFB15C18XS-250/P46	-R	1u
	150 x 10.0mm	PFB5C18XS-150/100	-R	1u	PFB10C18XS-150/100	-R	1u	PFB15C18XS-150/100	-R	1u
	250 x 10.0mm	PFB5C18XS-250/100	-R	1u	PFB10C18XS-250/100	-R	1u	PFB15C18XS-250/100	-R	1u
	50 x 21.2mm	PFB5C18XS-050/212	-R	1u	PFB10C18XS-050/212	-R	1u	PFB15C18XS-050/212	-R	1u
	100 x 21.2mm	PFB5C18XS-100/212	-R	1u	PFB10C18XS-100/212	-R	1u	PFB15C18XS-100/212	-R	1u
	150 x 21.2mm	PFB5C18XS-150/212	-R	1u	PFB10C18XS-150/212	-R	1u	PFB15C18XS-150/212	-R	1u
	250 x 21.2mm	PFB5C18XS-250/212	-R	1u	PFB10C18XS-250/212	-R	1u	PFB15C18XS-250/212	-R	1u
	50 x 30.0mm	PFB5C18XS-050/300	-R	1u	PFB10C18XS-050/300	-R	1u	PFB15C18XS-050/300	-R	1u
	100 x 30.0mm	PFB5C18XS-100/300	-R	1u	PFB10C18XS-100/300	-R	1u	PFB15C18XS-100/300	-R	1u
	150 x 30.0mm	PFB5C18XS-150/300	-R	1u	PFB10C18XS-150/300	-R	1u	PFB15C18XS-150/300	-R	1u
	250 x 30.0mm	PFB5C18XS-250/300	-R	1u	PFB10C18XS-250/300	-R	1u	PFB15C18XS-250/300	-R	1u
	50 x 50.0mm	PFB5C18XS-050/500	-R	1u	PFB10C18XS-050/500	-R	1u	PFB15C18XS-050/500	-R	1u
	250 x 50.0mm	PFB5C18XS-250/500	-R	1u	PFB10C18XS-250/500	-R	1u	PFB15C18XS-250/500	-R	1u

Flash Columns		15µm	RFID	Qty	30µm	RFID	Qty
	F0004	PFB-15C18XS-F0004	-R	4u	PFB-30C18XS-F0004	-R	4u
	F0012	PFB-15C18XS-F0012	-R	2u	PFB-30C18XS-F0012	-R	2u
	F0025	PFB-15C18XS-F0025	-R	1u	PFB-30C18XS-F0025	-R	1u
	F0040	PFB-15C18XS-F0040	-R	1u	PFB-30C18XS-F0040	-R	1u
	F0080	PFB-15C18XS-F0080	-R	1u	PFB-30C18XS-F0080	-R	1u
	F0120	PFB-15C18XS-F0120	-R	1u	PFB-30C18XS-F0120	-R	1u
	F0220	PFB-15C18XS-F0220	-R	1u	PFB-30C18XS-F0220	-R	1u
	F0330	PFB-15C18XS-F0330	-R	1u	PFB-30C18XS-F0330	-R	1u
	F0800	---	---	---	PFB-30C18XS-F0800	-R	1u
	F1600	---	---	---	PFB-30C18XS-F1600	-R	1u

RFID

RFID Columns
add [-R] at the end of P/N

puriFlash® BIO 200 C18-N

LC Preparative Columns		5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
	250 x 4.6mm	PT5C18N-250/P46	-R	1u	PT10C18N-250/P46	-R	1u	PT15C18N-250/P46	-R	1u
	150 x 10.0mm	PT5C18N-150/100	-R	1u	PT10C18N-150/100	-R	1u	PT15C18N-150/100	-R	1u
	250 x 10.0mm	PT5C18N-250/100	-R	1u	PT10C18N-250/100	-R	1u	PT15C18N-250/100	-R	1u
	50 x 21.2mm	PT5C18N-050/212	-R	1u	PT10C18N-050/212	-R	1u	PT15C18N-050/212	-R	1u
	100 x 21.2mm	PT5C18N-100/212	-R	1u	PT10C18N-100/212	-R	1u	PT15C18N-100/212	-R	1u
	150 x 21.2mm	PT5C18N-150/212	-R	1u	PT10C18N-150/212	-R	1u	PT15C18N-150/212	-R	1u
	250 x 21.2mm	PT5C18N-250/212	-R	1u	PT10C18N-250/212	-R	1u	PT15C18N-250/212	-R	1u
	50 x 30.0mm	PT5C18N-050/300	-R	1u	PT10C18N-050/300	-R	1u	PT15C18N-050/300	-R	1u
	100 x 30.0mm	PT5C18N-100/300	-R	1u	PT10C18N-100/300	-R	1u	PT15C18N-100/300	-R	1u
	150 x 30.0mm	PT5C18N-150/300	-R	1u	PT10C18N-150/300	-R	1u	PT15C18N-150/300	-R	1u
	250 x 30.0mm	PT5C18N-250/300	-R	1u	PT10C18N-250/300	-R	1u	PT15C18N-250/300	-R	1u
	50 x 50.0mm	PT5C18N-050/500	-R	1u	PT10C18N-050/500	-R	1u	PT15C18N-050/500	-R	1u
	250 x 50.0mm	PT5C18N-250/500	-R	1u	PT10C18N-250/500	-R	1u	PT15C18N-250/500	-R	1u

Flash Columns		15µm	RFID	Qty	30µm	RFID	Qty
	F0004	PT-15C18N-F0004	-R	4u	PT-30C18N-F0004	-R	4u
	F0012	PT-15C18N-F0012	-R	2u	PT-30C18N-F0012	-R	2u
	F0025	PT-15C18N-F0025	-R	1u	PT-30C18N-F0025	-R	1u
	F0040	PT-15C18N-F0040	-R	1u	PT-30C18N-F0040	-R	1u
	F0080	PT-15C18N-F0080	-R	1u	PT-30C18N-F0080	-R	1u
	F0120	PT-15C18N-F0120	-R	1u	PT-30C18N-F0120	-R	1u
	F0220	PT-15C18N-F0220	-R	1u	PT-30C18N-F0220	-R	1u
	F0330	PT-15C18N-F0330	-R	1u	PT-30C18N-F0330	-R	1u
	F0800	---	---	1u	PT-30C18N-F0800	-R	1u
	F1600	---	---	1u	PT-30C18N-F1600	-R	1u

puriFlash® BIO 200 C18-T

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PT5C18T-250/P46	-R	1u	PT10C18T-250/P46	-R	1u	PT15C18T-250/P46	-R	1u
150 x 10.0mm	PT5C18T-150/100	-R	1u	PT10C18T-150/100	-R	1u	PT15C18T-150/100	-R	1u
250 x 10.0mm	PT5C18T-250/100	-R	1u	PT10C18T-250/100	-R	1u	PT15C18T-250/100	-R	1u
50 x 21.2mm	PT5C18T-050/212	-R	1u	PT10C18T-050/212	-R	1u	PT15C18T-050/212	-R	1u
100 x 21.2mm	PT5C18T-100/212	-R	1u	PT10C18T-100/212	-R	1u	PT15C18T-100/212	-R	1u
150 x 21.2mm	PT5C18T-150/212	-R	1u	PT10C18T-150/212	-R	1u	PT15C18T-150/212	-R	1u
250 x 21.2mm	PT5C18T-250/212	-R	1u	PT10C18T-250/212	-R	1u	PT15C18T-250/212	-R	1u
50 x 30.0mm	PT5C18T-050/300	-R	1u	PT10C18T-050/300	-R	1u	PT15C18T-050/300	-R	1u
100 x 30.0mm	PT5C18T-100/300	-R	1u	PT10C18T-100/300	-R	1u	PT15C18T-100/300	-R	1u
150 x 30.0mm	PT5C18T-150/300	-R	1u	PT10C18T-150/300	-R	1u	PT15C18T-150/300	-R	1u
250 x 30.0mm	PT5C18T-250/300	-R	1u	PT10C18T-250/300	-R	1u	PT15C18T-250/300	-R	1u
50 x 50.0mm	PT5C18T-050/500	-R	1u	PT10C18T-050/500	-R	1u	PT15C18T-050/500	-R	1u
250 x 50.0mm	PT5C18T-250/500	-R	1u	PT10C18T-250/500	-R	1u	PT15C18T-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0004	PT-15C18T-F0004	-R	4u	PT-30C18T-F0004	-R	4u
F0012	PT-15C18T-F0012	-R	2u	PT-30C18T-F0012	-R	2u
F0025	PT-15C18T-F0025	-R	1u	PT-30C18T-F0025	-R	1u
F0040	PT-15C18T-F0040	-R	1u	PT-30C18T-F0040	-R	1u
F0080	PT-15C18T-F0080	-R	1u	PT-30C18T-F0080	-R	1u
F0120	PT-15C18T-F0120	-R	1u	PT-30C18T-F0120	-R	1u
F0220	PT-15C18T-F0220	-R	1u	PT-30C18T-F0220	-R	1u
F0330	PT-15C18T-F0330	-R	1u	PT-30C18T-F0330	-R	1u
F0800	---	---	---	PT-30C18T-F0800	-R	1u
F1600	---	---	---	PT-30C18T-F1600	-R	1u

RFID

RFID Columns
add [-R] at the end of P/N

puriFlash® BIO 200 C18-XS

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PT5C18XS-250/P46	-R	1u	PT10C18XS-250/P46	-R	1u	PT15C18XS-250/P46	-R	1u
150 x 10.0mm	PT5C18XS-150/100	-R	1u	PT10C18XS-150/100	-R	1u	PT15C18XS-150/100	-R	1u
250 x 10.0mm	PT5C18XS-250/100	-R	1u	PT10C18XS-250/100	-R	1u	PT15C18XS-250/100	-R	1u
50 x 21.2mm	PT5C18XS-050/212	-R	1u	PT10C18XS-050/212	-R	1u	PT15C18XS-050/212	-R	1u
100 x 21.2mm	PT5C18XS-100/212	-R	1u	PT10C18XS-100/212	-R	1u	PT15C18XS-100/212	-R	1u
150 x 21.2mm	PT5C18XS-150/212	-R	1u	PT10C18XS-150/212	-R	1u	PT15C18XS-150/212	-R	1u
250 x 21.2mm	PT5C18XS-250/212	-R	1u	PT10C18XS-250/212	-R	1u	PT15C18XS-250/212	-R	1u
50 x 30.0mm	PT5C18XS-050/300	-R	1u	PT10C18XS-050/300	-R	1u	PT15C18XS-050/300	-R	1u
100 x 30.0mm	PT5C18XS-100/300	-R	1u	PT10C18XS-100/300	-R	1u	PT15C18XS-100/300	-R	1u
150 x 30.0mm	PT5C18XS-150/300	-R	1u	PT10C18XS-150/300	-R	1u	PT15C18XS-150/300	-R	1u
250 x 30.0mm	PT5C18XS-250/300	-R	1u	PT10C18XS-250/300	-R	1u	PT15C18XS-250/300	-R	1u
50 x 50.0mm	PT5C18XS-050/500	-R	1u	PT10C18XS-050/500	-R	1u	PT15C18XS-050/500	-R	1u
250 x 50.0mm	PT5C18XS-250/500	-R	1u	PT10C18XS-250/500	-R	1u	PT15C18XS-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0004	PT-15C18XS-F0004	-R	4u	PT-30C18XS-F0004	-R	4u
F0012	PT-15C18XS-F0012	-R	2u	PT-30C18XS-F0012	-R	2u
F0025	PT-15C18XS-F0025	-R	1u	PT-30C18XS-F0025	-R	1u
F0040	PT-15C18XS-F0040	-R	1u	PT-30C18XS-F0040	-R	1u
F0080	PT-15C18XS-F0080	-R	1u	PT-30C18XS-F0080	-R	1u
F0120	PT-15C18XS-F0120	-R	1u	PT-30C18XS-F0120	-R	1u
F0220	PT-15C18XS-F0220	-R	1u	PT-30C18XS-F0220	-R	1u
F0330	PT-15C18XS-F0330	-R	1u	PT-30C18XS-F0330	-R	1u
F0800	---	---	---	PT-30C18XS-F0800	-R	1u
F1600	---	---	---	PT-30C18XS-F1600	-R	1u

puriFlash® BIO 200 C8-N

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PT5C8N-250/P46	-R	1u	PT10C8N-250/P46	-R	1u	PT15C8N-250/P46	-R	1u
150 x 10.0mm	PT5C8N-150/100	-R	1u	PT10C8N-150/100	-R	1u	PT15C8N-150/100	-R	1u
250 x 10.0mm	PT5C8N-250/100	-R	1u	PT10C8N-250/100	-R	1u	PT15C8N-250/100	-R	1u
50 x 21.2mm	PT5C8N-050/212	-R	1u	PT10C8N-050/212	-R	1u	PT15C8N-050/212	-R	1u
100 x 21.2mm	PT5C8N-100/212	-R	1u	PT10C8N-100/212	-R	1u	PT15C8N-100/212	-R	1u
150 x 21.2mm	PT5C8N-150/212	-R	1u	PT10C8N-150/212	-R	1u	PT15C8N-150/212	-R	1u
250 x 21.2mm	PT5C8N-250/212	-R	1u	PT10C8N-250/212	-R	1u	PT15C8N-250/212	-R	1u
50 x 30.0mm	PT5C8N-050/300	-R	1u	PT10C8N-050/300	-R	1u	PT15C8N-050/300	-R	1u
100 x 30.0mm	PT5C8N-100/300	-R	1u	PT10C8N-100/300	-R	1u	PT15C8N-100/300	-R	1u
150 x 30.0mm	PT5C8N-150/300	-R	1u	PT10C8N-150/300	-R	1u	PT15C8N-150/300	-R	1u
250 x 30.0mm	PT5C8N-250/300	-R	1u	PT10C8N-250/300	-R	1u	PT15C8N-250/300	-R	1u
50 x 50.0mm	PT5C8N-050/500	-R	1u	PT10C8N-050/500	-R	1u	PT15C8N-050/500	-R	1u
250 x 50.0mm	PT5C8N-250/500	-R	1u	PT10C8N-250/500	-R	1u	PT15C8N-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0004	PT-15C8N-F0004	-R	4u	PT-30C8N-F0004	-R	4u
F0012	PT-15C8N-F0012	-R	2u	PT-30C8N-F0012	-R	2u
F0025	PT-15C8N-F0025	-R	1u	PT-30C8N-F0025	-R	1u
F0040	PT-15C8N-F0040	-R	1u	PT-30C8N-F0040	-R	1u
F0080	PT-15C8N-F0080	-R	1u	PT-30C8N-F0080	-R	1u
F0120	PT-15C8N-F0120	-R	1u	PT-30C8N-F0120	-R	1u
F0220	PT-15C8N-F0220	-R	1u	PT-30C8N-F0220	-R	1u
F0330	PT-15C8N-F0330	-R	1u	PT-30C8N-F0330	-R	1u
F0800	---	---	---	PT-30C8N-F0800	-R	1u
F1600	---	---	---	PT-30C8N-F1600	-R	1u

RFID

RFID Columns
add [-R] at the end of P/N

puriFlash® BIO 300 C4-AQ

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PP5C4AQ-250/P46	-R	1u	PP10C4AQ-250/P46	-R	1u	PP15C4AQ-250/P46	-R	1u
150 x 10.0mm	PP5C4AQ-150/100	-R	1u	PP10C4AQ-150/100	-R	1u	PP15C4AQ-150/100	-R	1u
250 x 10.0mm	PP5C4AQ-250/100	-R	1u	PP10C4AQ-250/100	-R	1u	PP15C4AQ-250/100	-R	1u
50 x 21.2mm	PP5C4AQ-050/212	-R	1u	PP10C4AQ-050/212	-R	1u	PP15C4AQ-050/212	-R	1u
100 x 21.2mm	PP5C4AQ-100/212	-R	1u	PP10C4AQ-100/212	-R	1u	PP15C4AQ-100/212	-R	1u
150 x 21.2mm	PP5C4AQ-150/212	-R	1u	PP10C4AQ-150/212	-R	1u	PP15C4AQ-150/212	-R	1u
250 x 21.2mm	PP5C4AQ-250/212	-R	1u	PP10C4AQ-250/212	-R	1u	PP15C4AQ-250/212	-R	1u
50 x 30.0mm	PP5C4AQ-050/300	-R	1u	PP10C4AQ-050/300	-R	1u	PP15C4AQ-050/300	-R	1u
100 x 30.0mm	PP5C4AQ-100/300	-R	1u	PP10C4AQ-100/300	-R	1u	PP15C4AQ-100/300	-R	1u
150 x 30.0mm	PP5C4AQ-150/300	-R	1u	PP10C4AQ-150/300	-R	1u	PP15C4AQ-150/300	-R	1u
250 x 30.0mm	PP5C4AQ-250/300	-R	1u	PP10C4AQ-250/300	-R	1u	PP15C4AQ-250/300	-R	1u
50 x 50.0mm	PP5C4AQ-050/500	-R	1u	PP10C4AQ-050/500	-R	1u	PP15C4AQ-050/500	-R	1u
250 x 50.0mm	PP5C4AQ-250/500	-R	1u	PP10C4AQ-250/500	-R	1u	PP15C4AQ-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0004	PP-15C4AQ-F0004	-R	4u	PP-30C4AQ-F0004	-R	4u
F0012	PP-15C4AQ-F0012	-R	2u	PP-30C4AQ-F0012	-R	2u
F0025	PP-15C4AQ-F0025	-R	1u	PP-30C4AQ-F0025	-R	1u
F0040	PP-15C4AQ-F0040	-R	1u	PP-30C4AQ-F0040	-R	1u
F0080	PP-15C4AQ-F0080	-R	1u	PP-30C4AQ-F0080	-R	1u
F0120	PP-15C4AQ-F0120	-R	1u	PP-30C4AQ-F0120	-R	1u
F0220	PP-15C4AQ-F0220	-R	1u	PP-30C4AQ-F0220	-R	1u
F0330	PP-15C4AQ-F0330	-R	1u	PP-30C4AQ-F0330	-R	1u
F0800	---	---	---	PP-30C4AQ-F0800	-R	1u
F1600	---	---	---	PP-30C4AQ-F1600	-R	1u

puriFlash® 200 C18-AQ

Flash Columns		15µm	RFID	Qty
	F0004	PT-15C18AQ-F0004	-R	4u
	F0012	PT-15C18AQ-F0012	-R	2u
	F0025	PT-15C18AQ-F0025	-R	1u
	F0040	PT-15C18AQ-F0040	-R	1u
	F0080	PT-15C18AQ-F0080	-R	1u
	F0120	PT-15C18AQ-F0120	-R	1u
	F0220	PT-15C18AQ-F0220	-R	1u
	F0330	PT-15C18AQ-F0330	-R	1u

puriFlash® 200 C8

Flash Columns		15µm	RFID	Qty
	F0004	PT-15C8-F0004	-R	4u
	F0012	PT-15C8-F0012	-R	2u
	F0025	PT-15C8-F0025	-R	1u
	F0040	PT-15C8-F0040	-R	1u
	F0080	PT-15C8-F0080	-R	1u
	F0120	PT-15C8-F0120	-R	1u
	F0220	PT-15C8-F0220	-R	1u
	F0330	PT-15C8-F0330	-R	1u

puriFlash® 200 C4

Flash Columns		15µm	RFID	Qty
	F0004	PT-15C4-F0004	-R	4u
	F0012	PT-15C4-F0012	-R	2u
	F0025	PT-15C4-F0025	-R	1u
	F0040	PT-15C4-F0040	-R	1u
	F0080	PT-15C4-F0080	-R	1u
	F0120	PT-15C4-F0120	-R	1u
	F0220	PT-15C4-F0220	-R	1u
	F0330	PT-15C4-F0330	-R	1u

puriFlash® 300 C18

Flash Columns		15µm	RFID	Qty
	F0004	PP-15C18-F0004	-R	4u
	F0012	PP-15C18-F0012	-R	2u
	F0025	PP-15C18-F0025	-R	1u
	F0040	PP-15C18-F0040	-R	1u
	F0080	PP-15C18-F0080	-R	1u
	F0120	PP-15C18-F0120	-R	1u
	F0220	PP-15C18-F0220	-R	1u
	F0330	PP-15C18-F0330	-R	1u

puriFlash® 300 C4

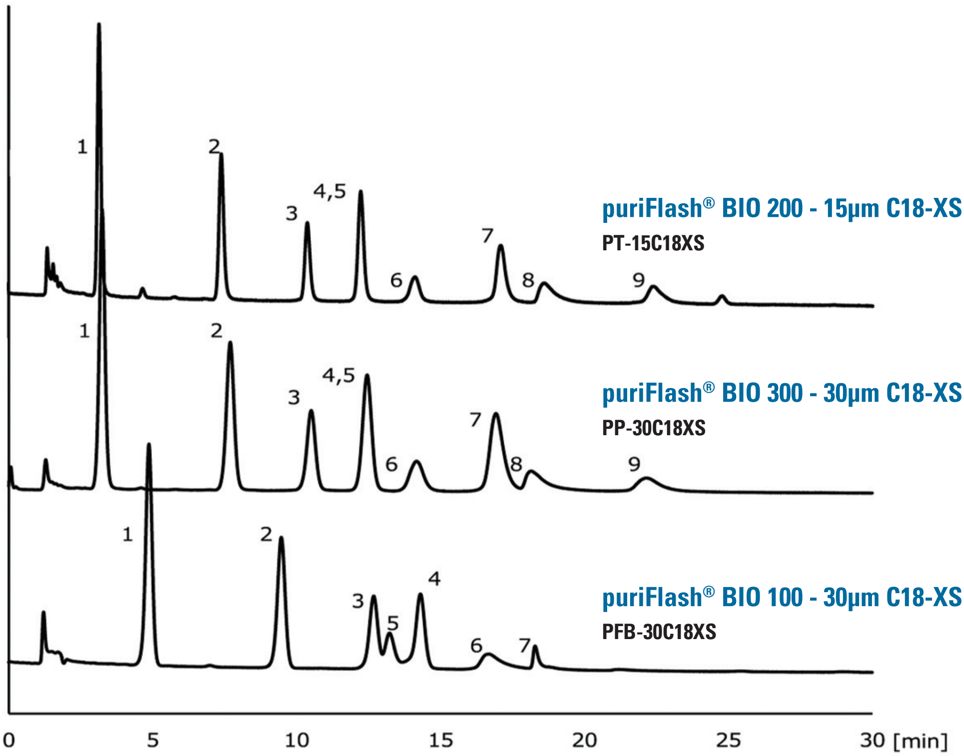
Flash Columns		15µm	RFID	Qty
	F0004	PP-15C4-F0004	-R	4u
	F0012	PP-15C4-F0012	-R	2u
	F0025	PP-15C4-F0025	-R	1u
	F0040	PP-15C4-F0040	-R	1u
	F0080	PP-15C4-F0080	-R	1u
	F0120	PP-15C4-F0120	-R	1u
	F0220	PP-15C4-F0220	-R	1u
	F0330	PP-15C4-F0330	-R	1u

RFID

RFID Columns
add [-R] at the end of P/N

Tel.: +33 4 70 03 88 55 I Hotline: +33 4 70 03 73 01 I E-mail: interfine@interchim.fr I Fax: +33 4 70 03 82 60 I WWW.INTERCHIM.COM

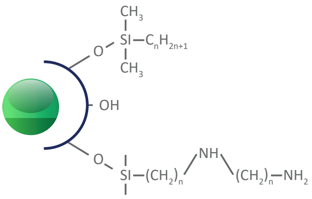
Separation / Purification of Peptides and Proteins by HPLC / UV



1. Gly-Tyr (238 Da)
2. Val-Tyr-Val (380 Da)
3. Met-Enkephalin (574Da)
4. Leu-Enkephalin (556 Da)
5. Angiotensin II acetate (1 kDa)
6. Ribonuclease A (13.7 kDa)
7. Cytochrome C (12 kDa)
8. Holo-transferrin (80 kDa)
9. Aponyoglobin (16.95 kDa)

Acetonitrile / Water = 5:95 - 60:40(v/v), tg : 0 - 30min,
flow rate : 2mL/min, T° : 40°C, 280nm, Injection 10uL,
Column size 250x4.6mmID
Peptide standard (0.25 mg/mL) + Protein standard (0.5mg/mL)

Oligonucleotides



puriFlash® BIO RPNH

100Å - 320m²/g
3.5, 5, 10, 15 & 30µm
RP - Alkyl chain/Amines
Mono-functional
%C: 4.0
End-capping: None
pH stability: 1.5 to 8.0
Use mode: Reverse/Ion Exchange
Ultra fast & efficient analysis of oligonucleotides up to 25 mer.

Oligonucleotides < 25 mer .... **puriFlash® BIO 100 2.5RPNH**
Oligonucleotides < 40 mer .... **puriFlash® BIO 200 RPNH**
Aptamers, DNA .... **puriFlash® BIO 300 RPNH**

puriFlash® BIO 100 2.5µm RP-NH

LC Preparative Columns	2.1mm ID	RFID	Qty	3.0mm ID	RFID	Qty	4.6mm ID	RFID	Qty
25mm	PFB2.5RPNH-025/021	-R	1u	PFB2.5RPNH-025/030	-R	1u	PFB2.5RPNH-025/046	-R	1u
50 mm	PFB2.5RPNH-050/021	-R	1u	PFB2.5RPNH-050/030	-R	1u	PFB2.5RPNH-050/046	-R	1u
75mm	PFB2.5RPNH-075/021	-R	1u	PFB2.5RPNH-075/030	-R	1u	PFB2.5RPNH-075/046	-R	1u
100mm	PFB2.5RPNH-100/021	-R	1u	PFB2.5RPNH-100/030	-R	1u	PFB2.5RPNH-100/046	-R	1u
125mm	PFB2.5RPNH-125/021	-R	1u	PFB2.5RPNH-125/030	-R	1u	PFB2.5RPNH-125/046	-R	1u
150mm	PFB2.5RPNH-150/021	-R	1u	PFB2.5RPNH-150/030	-R	1u	PFB2.5RPNH-150/046	-R	1u

puriFlash® BIO 200 RP-NH

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PT5RPNH-250/P46	-R	1u	PT10RPNH-250/P46	-R	1u	PT15RPNH-250/P46	-R	1u
150 x 10.0mm	PT5RPNH-150/100	-R	1u	PT10RPNH-150/100	-R	1u	PT15RPNH-150/100	-R	1u
250 x 10.0mm	PT5RPNH-250/100	-R	1u	PT10RPNH-250/100	-R	1u	PT15RPNH-250/100	-R	1u
50 x 21.2mm	PT5RPNH-050/212	-R	1u	PT10RPNH-050/212	-R	1u	PT15RPNH-050/212	-R	1u
100 x 21.2mm	PT5RPNH-100/212	-R	1u	PT10RPNH-100/212	-R	1u	PT15RPNH-100/212	-R	1u
150 x 21.2mm	PT5RPNH-150/212	-R	1u	PT10RPNH-150/212	-R	1u	PT15RPNH-150/212	-R	1u
250 x 21.2mm	PT5RPNH-250/212	-R	1u	PT10RPNH-250/212	-R	1u	PT15RPNH-250/212	-R	1u
50 x 30.0mm	PT5RPNH-050/300	-R	1u	PT10RPNH-050/300	-R	1u	PT15RPNH-050/300	-R	1u
100 x 30.0mm	PT5RPNH-100/300	-R	1u	PT10RPNH-100/300	-R	1u	PT15RPNH-100/300	-R	1u
150 x 30.0mm	PT5RPNH-150/300	-R	1u	PT10RPNH-150/300	-R	1u	PT15RPNH-150/300	-R	1u
250 x 30.0mm	PT5RPNH-250/300	-R	1u	PT10RPNH-250/300	-R	1u	PT15RPNH-250/300	-R	1u
50 x 50.0mm	PT5RPNH-050/500	-R	1u	PT10RPNH-050/500	-R	1u	PT15RPNH-050/500	-R	1u
250 x 50.0mm	PT5RPNH-250/500	-R	1u	PT10RPNH-250/500	-R	1u	PT15RPNH-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0004	PT-15RPNH-F0004	-R	4u	PT-30RPNH-F0004	-R	4u
F0012	PT-15RPNH-F0012	-R	2u	PT-30RPNH-F0012	-R	2u
F0025	PT-15RPNH-F0025	-R	1u	PT-30RPNH-F0025	-R	1u
F0040	PT-15RPNH-F0040	-R	1u	PT-30RPNH-F0040	-R	1u
F0080	PT-15RPNH-F0080	-R	1u	PT-30RPNH-F0080	-R	1u
F0120	PT-15RPNH-F0120	-R	1u	PT-30RPNH-F0120	-R	1u
F0220	PT-15RPNH-F0220	-R	1u	PT-30RPNH-F0220	-R	1u
F0330	PT-15RPNH-F0330	-R	1u	PT-30RPNH-F0330	-R	1u
F0800	---	---	---	PT-30RPNH-F0800	-R	1u
F1600	---	---	---	PT-30RPNH-F1600	-R	1u

RFID Columns
add [-R] at the end of P/N

puriFlash® BIO 300 RP-NH

LC Preparative Columns	5µm	RFID	Qty	10µm	RFID	Qty	15µm	RFID	Qty
250 x 4.6mm	PP5RPNH-250/P46	-R	1u	PP10RPNH-250/P46	-R	1u	PP15RPNH-250/P46	-R	1u
150 x 10.0mm	PP5RPNH-150/100	-R	1u	PP10RPNH-150/100	-R	1u	PP15RPNH-150/100	-R	1u
250 x 10.0mm	PP5RPNH-250/100	-R	1u	PP10RPNH-250/100	-R	1u	PP15RPNH-250/100	-R	1u
50 x 21.2mm	PP5RPNH-050/212	-R	1u	PP10RPNH-050/212	-R	1u	PP15RPNH-050/212	-R	1u
100 x 21.2mm	PP5RPNH-100/212	-R	1u	PP10RPNH-100/212	-R	1u	PP15RPNH-100/212	-R	1u
150 x 21.2mm	PP5RPNH-150/212	-R	1u	PP10RPNH-150/212	-R	1u	PP15RPNH-150/212	-R	1u
250 x 21.2mm	PP5RPNH-250/212	-R	1u	PP10RPNH-250/212	-R	1u	PP15RPNH-250/212	-R	1u
50 x 30.0mm	PP5RPNH-050/300	-R	1u	PP10RPNH-050/300	-R	1u	PP15RPNH-050/300	-R	1u
100 x 30.0mm	PP5RPNH-100/300	-R	1u	PP10RPNH-100/300	-R	1u	PP15RPNH-100/300	-R	1u
150 x 30.0mm	PP5RPNH-150/300	-R	1u	PP10RPNH-150/300	-R	1u	PP15RPNH-150/300	-R	1u
250 x 30.0mm	PP5RPNH-250/300	-R	1u	PP10RPNH-250/300	-R	1u	PP15RPNH-250/300	-R	1u
50 x 50.0mm	PP5RPNH-050/500	-R	1u	PP10RPNH-050/500	-R	1u	PP15RPNH-050/500	-R	1u
250 x 50.0mm	PP5RPNH-250/500	-R	1u	PP10RPNH-250/500	-R	1u	PP15RPNH-250/500	-R	1u

Flash Columns	15µm	RFID	Qty	30µm	RFID	Qty
F0004	PP-15RPNH-F0004	-R	4u	PP-30RPNH-F0004	-R	4u
F0012	PP-15RPNH-F0012	-R	2u	PP-30RPNH-F0012	-R	2u
F0025	PP-15RPNH-F0025	-R	1u	PP-30RPNH-F0025	-R	1u
F0040	PP-15RPNH-F0040	-R	1u	PP-30RPNH-F0040	-R	1u
F0080	PP-15RPNH-F0080	-R	1u	PP-30RPNH-F0080	-R	1u
F0120	PP-15RPNH-F0120	-R	1u	PP-30RPNH-F0120	-R	1u
F0220	PP-15RPNH-F0220	-R	1u	PP-30RPNH-F0220	-R	1u
F0330	PP-15RPNH-F0330	-R	1u	PP-30RPNH-F0330	-R	1u
F0800	---	---	---	PP-30RPNH-F0800	-R	1u
F1600	---	---	---	PP-30RPNH-F1600	-R	1u

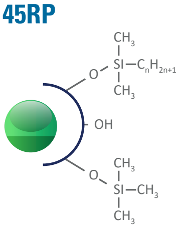
RFID

RFID Columns
add [-R] at the end of P/N

Desalting & Host Cell Fishing

puriFlash® BIO 200 45RP

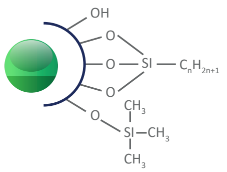
200Å - 200m²/g
45µm
RP - Alkyl chain
Mono-functional
%C: 5.0
End-capping: Mixte
pH stability: 1.5 to 8.0
Use mode: Reverse
Desalting columns
for Synthetic Peptides



Flash Columns	45µm	RFID	Qty
F0004	PT-45RP-F0004	-R	4u
F0012	PT-45RP-F0012	-R	2u
F0025	PT-45RP-F0025	-R	1u
F0040	PT-45RP-F0040	-R	1u
F0080	PT-45RP-F0080	-R	1u
F0120	PT-45RP-F0120	-R	1u
F0220	PT-45RP-F0220	-R	1u
F0330	PT-45RP-F0330	-R	1u
F0800	PT-45RP-F0800	-R	1u
F1600	PT-45RP-F1600	-R	1u

puriFlash® BIO 300 50RPT

300Å - 100m²/g
50µm
RP - Alkyl chain
Tri-functional
%C: 3.0
End-capping: One-step
pH stability: 1.5 to 8.0
Use mode: Reverse
Host Cell Fishing in process scale clarification of cell culture harvests. To remove both host cell protein and host cell DNA from bioprocessing streams containing recombinant monoclonal antibody.



Flash Columns	50µm	RFID	Qty
F0004	PP-50RPT-F0004	-R	4u
F0012	PP-50RPT-F0012	-R	2u
F0025	PP-50RPT-F0025	-R	1u
F0040	PP-50RPT-F0040	-R	1u
F0080	PP-50RPT-F0080	-R	1u
F0120	PP-50RPT-F0120	-R	1u
F0220	PP-50RPT-F0220	-R	1u
F0330	PP-50RPT-F0330	-R	1u
F0800	PP-50RPT-F0800	-R	1u
F1600	PP-50RPT-F1600	-R	1u

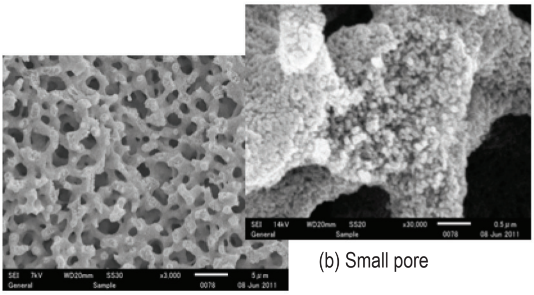
Notes:
Host Cell Fishing in process scale clarification of cell culture harvests.
To remove both host cell protein and host cell DNA from bioprocessing streams containing recombinant monoclonal antibody.

Interchim® Peptides monolith column is a pre-packed column with the novel silica gel for reversed-phase liquid chromatography that will permit high-speed processing only with a medium to low back pressure. The distinguished structure of Interchim® Peptides monolith (through pores) leads to a faster & deeper solvent perfusion inside the particles themselves. That conduces to a more effective purification, especially of macromolecules such as peptides, proteins, and nucleic acids, with an extremely low pressure.

- **High Purity and yet Low Pressure**
- **High Throughput**
- **Better resolution than conventional 15µm media only with less than 1/4 back pressure**

Crack-Free Controlled Fabrication > 500mL With Sharp Pore Distribution

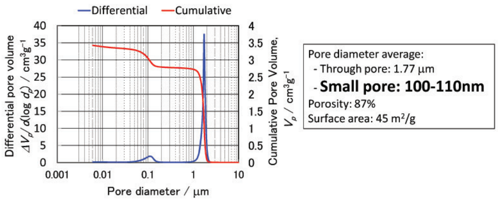
SEM Images



(b) Small pore

(a) Macropore

Pore Distribution (Example)



- Deviation is within 3% from 10 samplings.
- Through and small pores are open to change according to the optimal size for target adsorption/separation molecule. (Range for through pore: 1.0-10µm, small pore: 5-200 nm)

High Resolution & High Yield

- Effective for both small and large molecules in a gradient method
- Easy scaling up of the batch size

Ultra High-Throughput

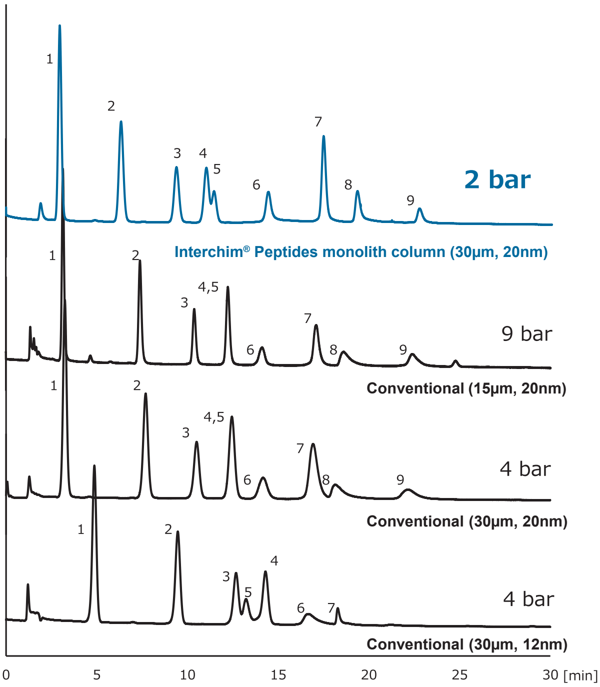
~80% reduction of purification time

Green & Eco Purification

- Acetonitrile & methanol free
- Free from toxic solvents

Enhanced Performance With Any System!

- Applicable even to a low-pressure pump system for better performance



1. Gly-Tyr (238 Da)
2. Val-Tyr-Val (380 Da)
3. Met-Enkephalin (574 Da)
4. Leu-enkephalin (556 Da)
5. Angiotensin II acetate (1 kDa)
6. Ribonuclease A(13.7 kDa)
7. Cytochrome c (12 kDa)
8. Holo-transferrin (80 kDa)
9. Apomyoglobin (16.95 kDa)

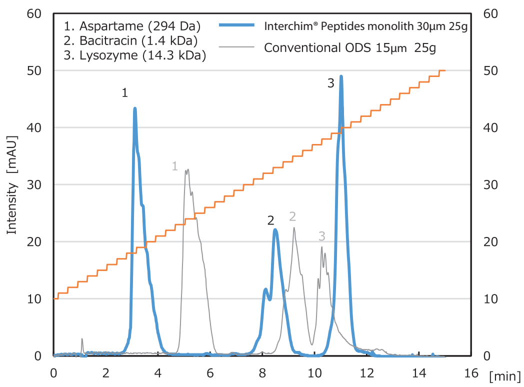
Comparative chromatogram by each ODS column for standard peptide/protein mixture separation

Acetonitrile: water (0.1% TFA) = 5:95-60:40(v/v), tg=0-30min, 2mL/min, 40 °C, 280nm, 250-4.6 mmID, Injection 10uL, Mixture of Peptide standard (0.25 mg/mL) and Protein standard (0.5mg/mL).

High Resolution & High Yield

High Resolution for Small to Large Molecules

Interchim® Peptides monolith column demonstrates high separation performance for a wide range of molecules. Particularly in a gradient mode, Interchim® Peptides monolith column having a particle diameter of 30µm shows equivalent or even better resolution than a conventional 15µm spherical media.

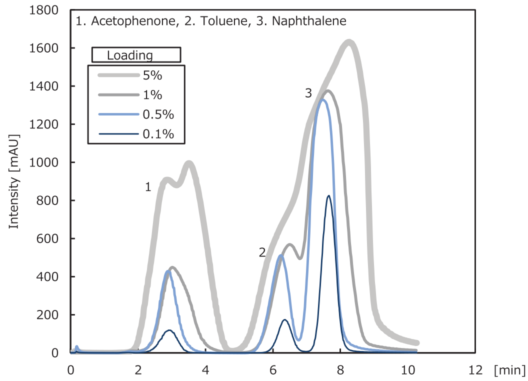


Small to Large Molecule Separation by Reversed Phase

Eluant : Acetonitrile/water(0.1% TFA)
Gradient : 10:90-50:50 in 15 min
Loading : 0.1% loading
Detection : 215 nm

Easy Scale-Up with Larger Column and Loading

Interchim® Peptides monolith column can solve the dilemma of giving up a high resolution purification for a larger capacity column due to the pressure limit. The feature of extremely low back pressure profile makes it easy to enlarge the column in parallel with increasing the loading amount to achieve both high resolution and high yield.



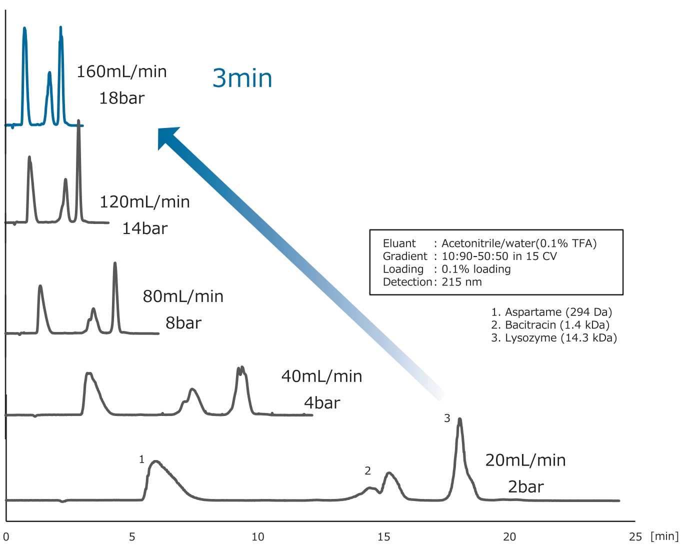
Loading Test with Small Molecules
by Interchim® Peptides monolith 30µm, 12g Column

Eluant : Acetonitrile/water
Gradient : 30:70-70:30 in 10 CV
Detection : 215 nm

Ultra High-Throughput

~80% Reduction of Processing Time

The Interchim® Peptides monolith column is really excellent in response to a gradient condition and displays a superb throughput at a very high flow rate. By raising the flow rate to the maximum pressure limit of the system, processing time of purification can be thoroughly shortened.

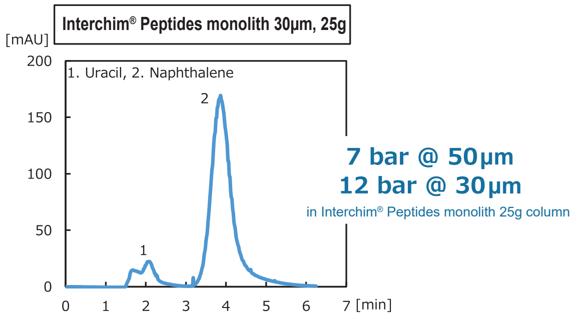


Ultra High Throughput Example by Interchim® Peptides monolith 30µm, 25g Column

Green & Eco Purification

2-Propanol for Eluant / Free from Toxic Reagents

Owing to its very low back pressure profile, Interchim® Peptides monolith column can achieve reverse phase purification using 2-propanol without giving up a high resolution. Green and eco processing free from toxic solvents like acetonitrile and methanol now comes true.



Reversed Phase Example Using 2-Propanol

Eluant : Isopropanol/water = 50:50
Loading : 0.1% loading
Detection : 215 nm

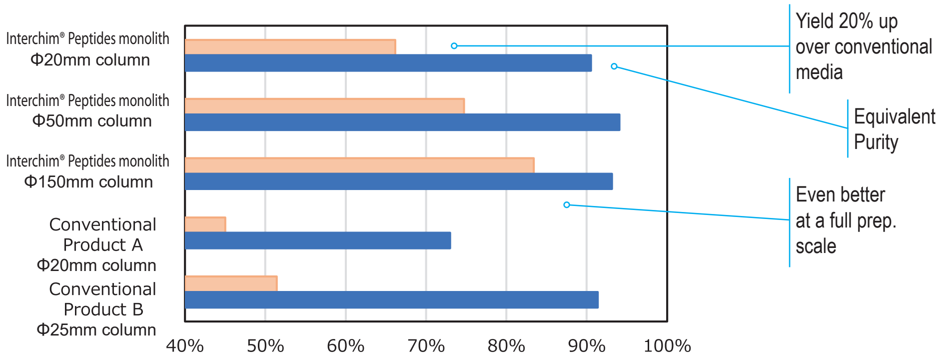
Enhanced Performance with Any System!

Compatible with Low / Medium Pressure Pump

Even in the reverse phase purification, the pressure of Interchim® Peptides monolith column is as low as 2 bar or less, at a standard flow rate and can be adapted to any low / medium pressure machine like puriFlash® machines and a syringe pump. More over, it is quite easy to improve separation performance by stacking 2 or more columns.

Prep. Scale Can Also Run at Low Pressure

Extremely low pressure profile of Interchim® Peptides monolith column enables very easy scale-up to a semi-preparative or a full preparative column without worrying about the pressure limit. It is already demonstrated in production plant with a column of 150mm in diameter for purification of peptide active substance (about 4kDa), which contains many impurities very difficult to purify.



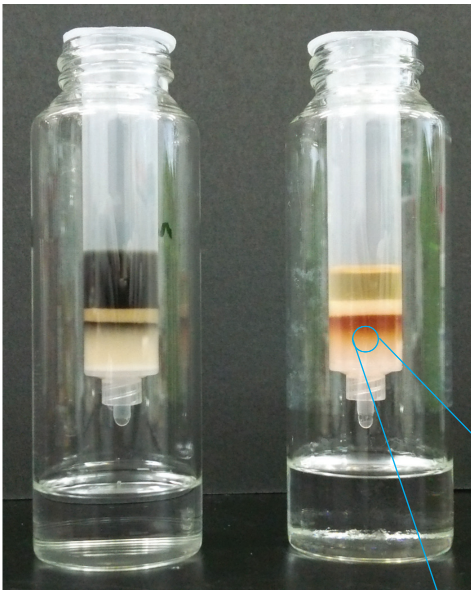
Comparison with Conventional Media in Actual Peptide API Production
(Particle Diameter) Interchim® Peptides monolith: 30µm, Conventional A: 45µm, B: 20µm
(Supported by Hamari Chemicals, Ltd. Japan)

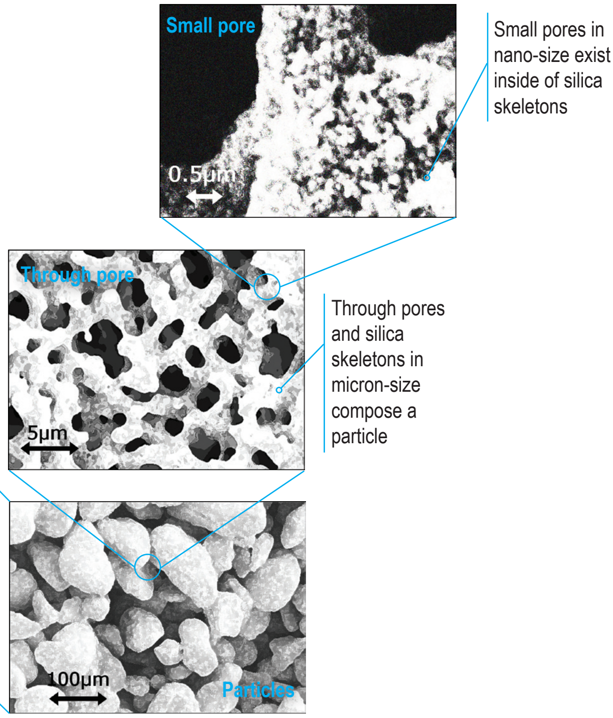
Flash Columns	Stationay Phases	Particle sizes	Column format	Part Number	Qty
	Monolith C18	30µm	F0004	PM-30C18-F0004	1u
	Monolith C18	30µm	F0012	PM-30C18-F0012	1u
	Monolith C18	30µm	F0025	PM-30C18-F0025	1u
	Monolith C18	30µm	F0040	PM-30C18-F0040	1u
	Monolith C18	30µm	F0080	PM-30C18-F0080	1u
	Monolith C18	30µm	F0120	PM-30C18-F0120	1u
	Monolith C18	30µm	F0220	PM-30C18-F0220	1u
	Monolith C18	30µm	F0330	PM-30C18-F0330	1u
	Monolith C18	50µm	F0004	PM-50C18-F0004	1u
	Monolith C18	50µm	F0012	PM-50C18-F0012	1u
	Monolith C18	50µm	F0025	PM-50C18-F0025	1u
	Monolith C18	50µm	F0040	PM-50C18-F0040	1u
	Monolith C18	50µm	F0080	PM-50C18-F0080	1u
	Monolith C18	50µm	F0120	PM-50C18-F0120	1u
	Monolith C18	50µm	F0220	PM-50C18-F0220	1u
	Monolith C18	50µm	F0330	PM-50C18-F0330	1u

Prep-LC Columns	Stationay Phases	Particle sizes	Column format	Part Number	Qty
	Monolith C18	15µm	100 x 4.6mm	PM15C18-100/P46	1u
	Monolith C18	15µm	150 x 4.6mm	PM15C18-150/P46	1u
	Monolith C18	15µm	250 x 4.6mm	PM15C18-250/P46	1u
	Monolith C18	15µm	100 x 10.0mm	PM15C18-100/100	1u
	Monolith C18	15µm	150 x 10.0mm	PM15C18-150/100	1u
	Monolith C18	15µm	250 x 10.0mm	PM15C18-250/100	1u
	Monolith C18	15µm	150 x 21.2mm	PM15C18-150/212	1u
	Monolith C18	15µm	250 x 21.2mm	PM15C18-250/212	1u
	Monolith C18	15µm	250 x 30.0mm	PM15C18-250/300	1u
	Monolith C18	30µm	100 x 4.6mm	PM30C18-100/P46	1u
	Monolith C18	30µm	150 x 4.6mm	PM30C18-150/P46	1u
	Monolith C18	30µm	250 x 4.6mm	PM30C18-250/P46	1u
	Monolith C18	30µm	100 x 10.0mm	PM30C18-100/100	1u
	Monolith C18	30µm	150 x 10.0mm	PM30C18-150/100	1u
	Monolith C18	30µm	250 x 10.0mm	PM30C18-250/100	1u
	Monolith C18	30µm	150 x 21.2mm	PM30C18-150/212	1u
	Monolith C18	30µm	250 x 21.2mm	PM30C18-250/212	1u
	Monolith C18	30µm	250 x 30.0mm	PM30C18-250/300	1u

Crack-Free Controlled Fabrication > 500mL With Sharp Pore Distribution

Enabling to Capture down to Sub-ppm Level
Under Non-Pressure, High-Speed, Flow-Through, Easy Mode

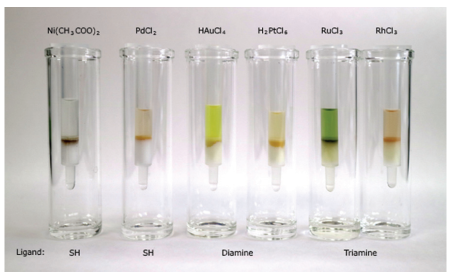




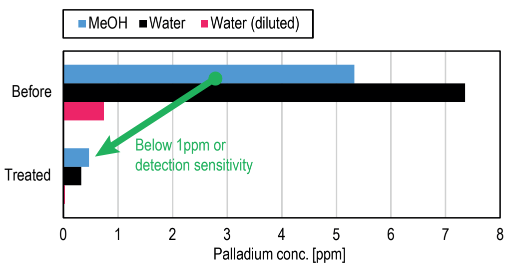
=> Simple capture of metal by a flow-through column: in less than 10 seconds!
=> Very effective thorough removal of target metal: much below 1ppm level

Applicable to various metals

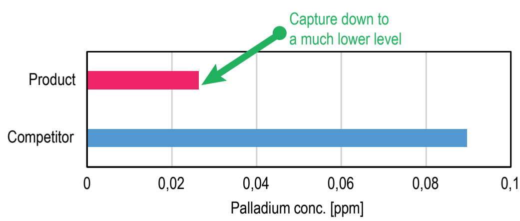
Don't you have a difficulty of removing residual metal catalysts? Our novel metal scavengers give you a robust solution to capture them much easier, much faster, and very effectively down to a sub-ppm level: Just pass them through a pre-filled open column and that's it!
The technology behind is based on a well-proven high-end material as an HPLC column, called monolithic silica.



Examples of Varied Metal Captures by Adsorption



Recovery test of palladium eluted in an actual solution after Sonogashira coupling reaction using SH type column
Column size: Φ5.6×10mm, Flow volume: 10 ~ 20mL
Supervised by Prof. Sajiki, Gifu Pharmaceutical University

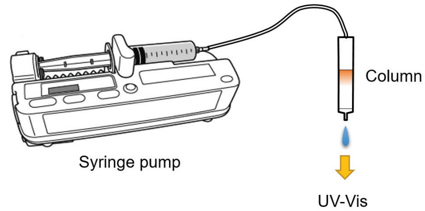


Recovery from palladium (II) chloride solution using SH type column
Pd conc.: 5ppm, Column: size Φ4×10mm, Solvent: 1M hydrochloic acid Total volume: 10mL, Flow rate: 1mL/min

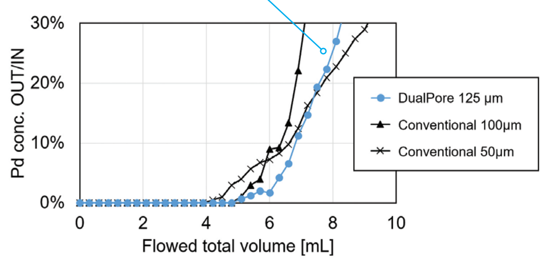
Since the adsorption equilibrium of the metal is stabilized on the adsorption side, it has a much higher adsorption power than conventional particles and exhibits a higher collecting power even at extremely low concentration. Thus, by a flow-through mode, it enables more effective removal down to a 1/4 or less residual concentration.

Pd adsorption from acid solution of $PdCl_2$

To assess the absorption capacity, palladium (II) chloride solution of 5 ppm is passed through the Novel High-Performance Metal Scavenger, with a mercapto ligand, and the concentration of palladium ion in the eluate is measured.



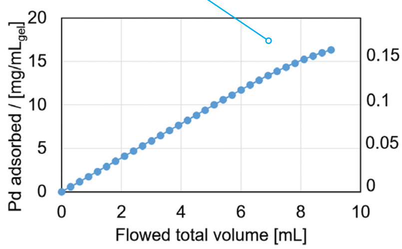
DualPore has less outflow than conventional silica with the same particle diameter



Column size: Φ3.6×10mm, Inlet Pd conc.: 0.2mg/mL,
Flow rate: 0.3mL/min (SV = 180)

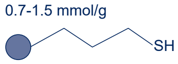
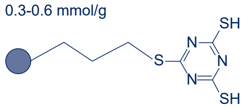
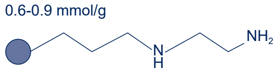
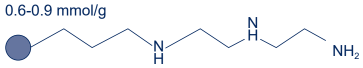
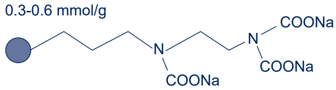
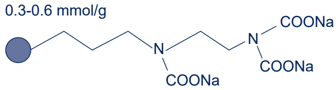
A palladium breakthrough curve flowing a palladium chloride solution in 1 M HCl through each the column

The immobilized mercapto group was 0.2 mmol / mLgel. Breakthrough seems to start when 50% or more of mercapto groups are filled with palladium ions.



Column size: Φ3.6×10mm, Inlet Pd conc.: 0.2mg/mL,
Flow rate: 0.3mL/min (SV = 180), Powder density: 0.2g/mL

The cumulative adsorption capacity per volume by flowing a palladium chloride solution in 1 M HCl through the DualPore column

Ligand	Ligand/Target metals of adsosption	Loading amount & the structure
SH **Mercaptopropyl**	Ag, Cu, Pd, Au, Rh etc.	0.7-1.5 mmol/g 
TMT **Trimercaptotriazine**	Ag, Cu, Pd, Au, Rh etc.	0.3-0.6 mmol/g 
Diamine **Propyl-N-ethylenediamine**	Pd, Pt, Au, Rh, Ru etc.	0.6-0.9 mmol/g 
Triamine **Propyl-N-diethylenetriamine**	Pd, Pt, Rh, Sc, In etc.	0.6-0.9 mmol/g 
TAAcONa **Triaminetriacetate sodium salt**	Pd, Pt, Rh, Sc, In etc.	0.3-0.6 mmol/g 
Full set of SH, TMT, Diamine, Triamine, and TAAcONa	Pd, Pt, Rh, Sc, In etc.	0.3-0.6 mmol/g 

Adsorption of eluted Pd from actual catalyzed reaction solution

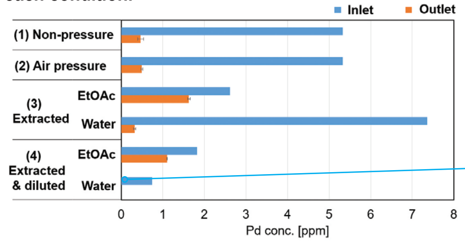
Recovery experiment of Pd species eluted in the current solution was attempted after Sonogashira coupling reaction using Pd/C. The Sonogashira coupling reaction was carried out in a 50% aqueous 2-propanol and its reaction solution was diluted to 50 mL with methanol and passed through a column with the DualPore silica with a mercapto ligand group under non-pressure (1). In addition, the adsorption behavior of palladium was examined under the following three conditions: (2) Condition in which the same palladium solution was passed through the column under air pressure, (3) condition in which the reaction solution after the Sonogashira coupling reaction was extracted with ethyl acetate and distilled water and passes through in the same as (2), and (4) The extracted solutions of (3) were passed through the column in the same as (2).

Flow conditions of the experiment

High adsorption rate can be attained even in a very short contact time in some case.

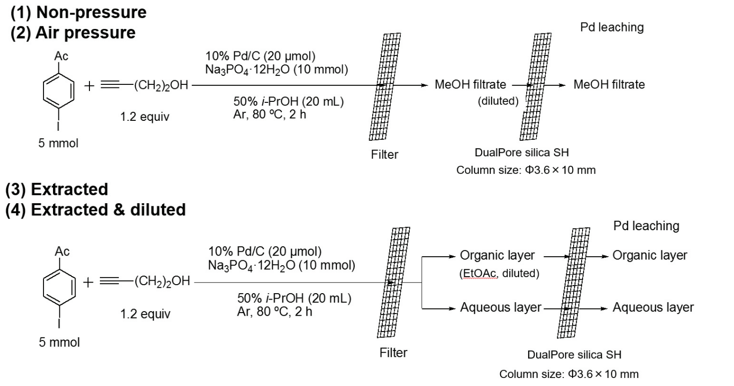
Condition	Solvent	Flow rate (mL/min)	Flowed solution (mL)	Contact time (sec)
(1) Non-pressure	MeOH	0.07	50	107
(2) Air pressure	MeOH	4	10	2
(3) Extracted	EtOAc	10	20	0.8
	Water	3	20	2.5
(4) Extracted	EtOAc	1.3	20	2.5
	Water	3	20	5.8

Pd concentration in solution from column inlet and outlet in each condition.

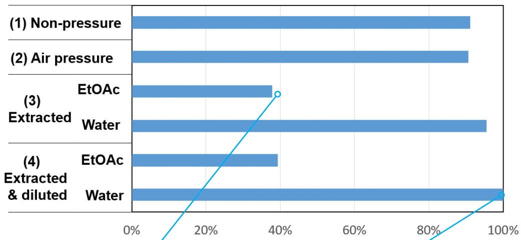


Pd conc. in the column outlet was below measurable limits

After Sonogashira coupling reaction and the treatment method of residual Pd solution



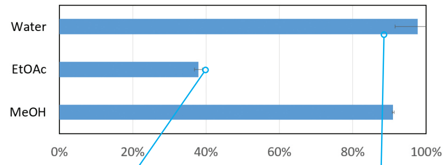
Adsorption rate of Pd concentrations in column outlet/inlet



Lower adsorption rate from EtOAc layer

Pd was almost 100% adsorbed from the water layer at a low concentration.

Adsorption rate of Pd concentration with each solvent



The adsorption rate from the hydrophobic organic layer was nearly constant at ~40%

With water or MeOH as solvent, the adsorption rate was remarkable. The adsorption rate did not depend on the flow rate and the initial concentration.

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Thiol				
Type	Format	Designation	Part Number	Qty/pack
MS-S	SPE Column	1mL	MS-SH-SPE1	50u
MS-S	SPE Column	3mL	MS-SH-SPE3	50u
MS-S	SPE Column	6mL	MS-SH-SPE6	30u
MS-S	Flash Column	20mL	MS-SH-FC20	1u
MS-S	Flash Column	60mL	MS-SH-FC60	1u
MS-S	Flash Column	150mL	MS-SH-FC150	1u
MS-S	Flash Column	550mL	MS-SH-FC550	1u
MS-S	Flash Column	1600mL	MS-SH-FC1600	1u
MS-L	Bulk	4L /1KG	MS-SH-1KG	1KG
MS-L	Bulk	1L /250G	MS-SH-250G	250G
MS-L	Bulk	400mL /100G	MS-SH-100G	100G
MS-L	Bulk	100mL /25G	MS-SH-25G	25G
MS-L	Bulk	4L /1KG	MS-L-SH-1KG	1KG
MS-L	Bulk	1L /250G	MS-L-SH-250G	250G
MS-L	Bulk	400mL /100G	MS-L-SH-100G	100G
MS-L	Bulk	100mL /25G	MS-L-SH-25G	25G

Triamine				
Type	Format	Designation	Part Number	Qty/pack
MS-S	SPE Column	1mL	MS-3NH-SPE1	50u
MS-S	SPE Column	3mL	MS-3NH-SPE3	50u
MS-S	SPE Column	6mL	MS-3NH-SPE6	30u
MS-S	Flash Column	20mL	MS-3NH-FC20	1u
MS-S	Flash Column	60mL	MS-3NH-FC60	1u
MS-S	Flash Column	150mL	MS-3NH-FC150	1u
MS-S	Flash Column	550mL	MS-3NH-FC550	1u
MS-S	Flash Column	1600mL	MS-3NH-FC1600	1u
MS-L	Bulk	4L /1KG	MS-3NH-1KG	1KG
MS-L	Bulk	1L /250G	MS-3NH-250G	250G
MS-L	Bulk	400mL /100G	MS-3NH-100G	100G
MS-L	Bulk	100mL /25G	MS-3NH-25G	25G
MS-L	Bulk	4L /1KG	MS-L-3NH-1KG	1KG
MS-L	Bulk	1L /250G	MS-L-3NH-250G	250G
MS-L	Bulk	400mL /100G	MS-L-3NH-100G	100G
MS-L	Bulk	100mL /25G	MS-L-3NH-25G	25G

TMT				
Type	Format	Designation	Part Number	Qty/pack
MS-S	SPE Column	1mL	MS-TMT-SPE1	50u
MS-S	SPE Column	3mL	MS-TMT-SPE3	50u
MS-S	SPE Column	6mL	MS-TMT-SPE6	30u
MS-S	Flash Column	20mL	MS-TMT-FC20	1u
MS-S	Flash Column	60mL	MS-TMT-FC60	1u
MS-S	Flash Column	150mL	MS-TMT-FC150	1u
MS-S	Flash Column	550mL	MS-TMT-FC550	1u
MS-S	Flash Column	1600mL	MS-TMT-FC1600	1u
MS-L	Bulk	4L /1KG	MS-TMT-1KG	1KG
MS-L	Bulk	1L /250G	MS-TMT-250G	250G
MS-L	Bulk	400mL /100G	MS-TMT-100G	100G
MS-L	Bulk	100mL /25G	MS-TMT-25G	25G
MS-L	Bulk	4L /1KG	MS-L-TMT-1KG	1KG
MS-L	Bulk	1L /250G	MS-L-TMT-250G	250G
MS-L	Bulk	400mL /100G	MS-L-TMT-100G	100G
MS-L	Bulk	100mL /25G	MS-L-TMT-25G	25G

TAAcONa				
Type	Format	Designation	Part Number	Qty/pack
MS-S	SPE Column	1mL	MS-TAAC-SPE1	50u
MS-S	SPE Column	3mL	MS-TAAC-SPE3	50u
MS-S	SPE Column	6mL	MS-TAAC-SPE6	30u
MS-S	Flash Column	20mL	MS-TAAC-FC20	1u
MS-S	Flash Column	60mL	MS-TAAC-FC60	1u
MS-S	Flash Column	150mL	MS-TAAC-FC150	1u
MS-S	Flash Column	550mL	MS-TAAC-FC550	1u
MS-S	Flash Column	1600mL	MS-TAAC-FC1600	1u
MS-L	Bulk	4L /1KG	MS-TAAC-1KG	1KG
MS-L	Bulk	1L /250G	MS-TAAC-250G	250G
MS-L	Bulk	400mL /100G	MS-TAAC-100G	100G
MS-L	Bulk	100mL /25G	MS-TAAC-25G	25G
MS-L	Bulk	4L /1KG	MS-L-TAAC-1KG	1KG
MS-L	Bulk	1L /250G	MS-L-TAAC-250G	250G
MS-L	Bulk	400mL /100G	MS-L-TAAC-100G	100G
MS-L	Bulk	100mL /25G	MS-L-TAAC-25G	25G

Diamine				
Type	Format	Designation	Part Number	Qty/pack
MS-S	SPE Column	1mL	MS-2NH-SPE1	50u
MS-S	SPE Column	3mL	MS-2NH-SPE3	50u
MS-S	SPE Column	6mL	MS-2NH-SPE6	30u
MS-S	Flash Column	20mL	MS-2NH-FC20	1u
MS-S	Flash Column	60mL	MS-2NH-FC60	1u
MS-S	Flash Column	150mL	MS-2NH-FC150	1u
MS-S	Flash Column	550mL	MS-2NH-FC550	1u
MS-S	Flash Column	1600mL	MS-2NH-FC1600	1u
MS-L	Bulk	4L /1KG	MS-2NH-1KG	1KG
MS-L	Bulk	1L /250G	MS-2NH-250G	250G
MS-L	Bulk	400mL /100G	MS-2NH-100G	100G
MS-L	Bulk	100mL /25G	MS-2NH-25G	25G
MS-L	Bulk	4L /1KG	MS-L-2NH-1KG	1KG
MS-L	Bulk	1L /250G	MS-L-2NH-250G	250G
MS-L	Bulk	400mL /100G	MS-L-2NH-100G	100G
MS-L	Bulk	100mL /25G	MS-L-2NH-25G	25G

5x Ligands				
Type	Format	Designation	Part Number	Qty/pack
MS-S	Kit	1mL	MS-KIT-SPE1	5x5u
MS-S	Kit	3mL	MS-KIT-SPE3	5x5u
MS-S	Kit	6mL	MS-KIT-SPE6	3x5u

5 Ligands				
Type	Format	Designation	Part Number	Qty/pack
MS-S	Kit	5G EA	MS-KIT-5X5G	5X5G
MS-L	Kit	5G EA	MS-L-KIT-5X5G	5X5G

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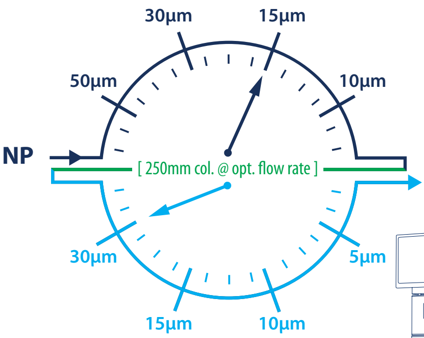
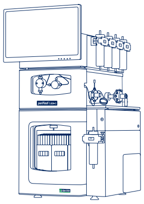
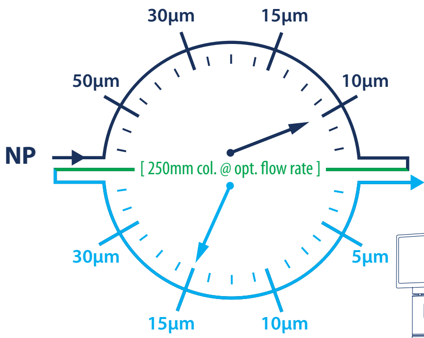
Instrumentation

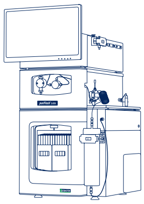




puriFlash® 5.020-5X

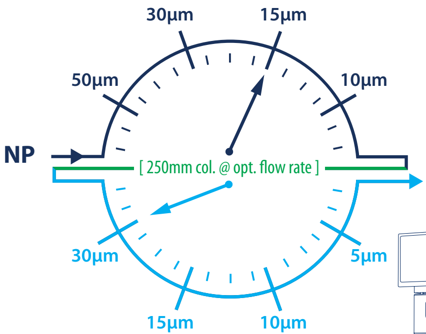
300mL/min @ to 20 bar

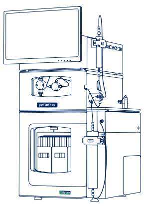




puriFlash® 5.050

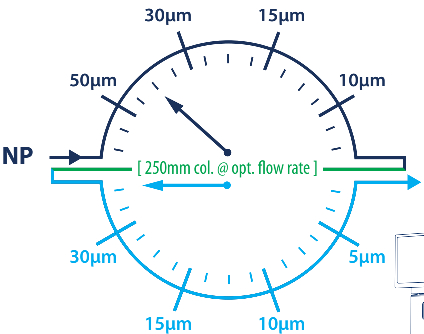
250mL/min @ to 50 bar

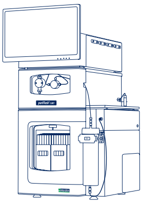




puriFlash® 5.020

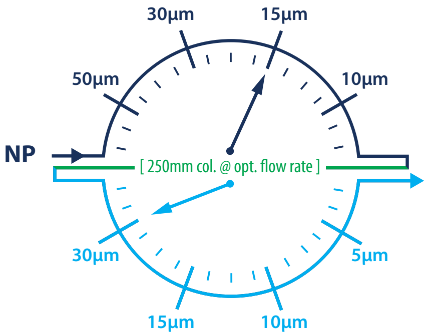
300mL/min @ to 20 bar

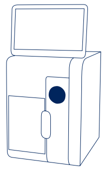




puriFlash® 5.007

750mL/min @ to 7 bar

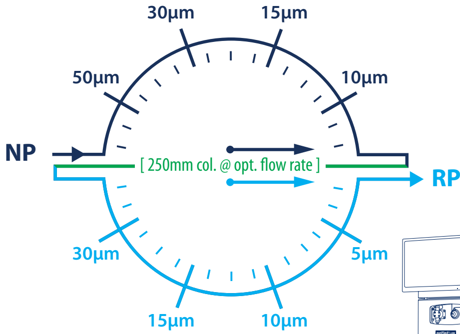


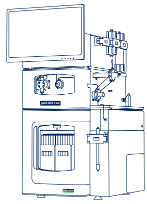


puriFlash® XS 520Plus

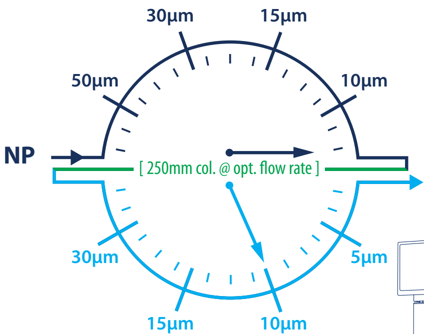
300mL/min @ to 20 bar

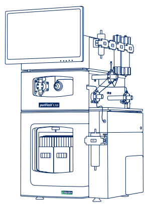
interchim®



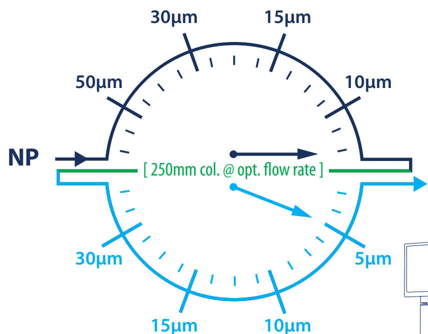


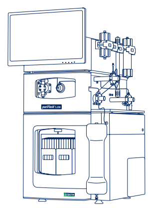
***puriFlash*®5.400**
125mL/min @ to 400 bar



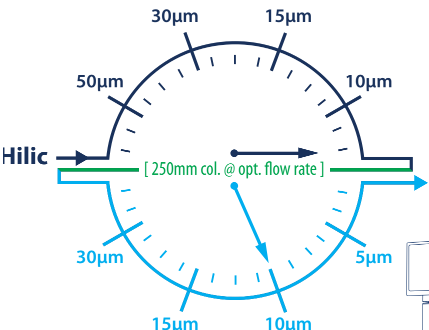


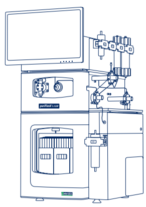
***puriFlash*®5.125**
250mL/min @ to 125 bar



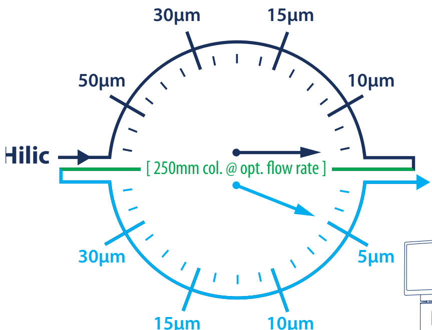


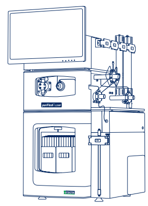
***puriFlash*®5.250**
250mL/min @ to 250 bar





***puriFlash*®5.125P**
250mL/min @ to 125 bar





***puriFlash*®5.250P**
125mL/min @ to 250 bar

puriFlash® Generation 5

Ultra Performance Flash Purification
or How to do high throughput purification?

These Best-In-Class instruments are fully designed to make your purification Easier, Intuitive & Productive.

Compact & Technological =>

The "Reduced Sphere of Use" improves ergonomics of the workstation. The global productivity of the working space is drastically amplified by having a lot of Integrated technologies (DEDL, UV, leak detector, ..) in such a small box.
On top of that, you can decide for a Bench-top installation of the instrument, the "Fume Encloser" feature safely optimizes the management of your workspace leaving your fume-hood free for chemistry
Versatile in terms of applications, the fine-tuning of the detection technologies employed guarantees maximum purification yield without loss of product.

Reliable & Safe =>

Run 24/7 with Confidence for a minimum of After Sales Service required. Bad surprises or hidden costs aren't to be feared atfer the purchase. The cost of use is perfectly mastered.
You can stay focused on your job with the necessary peace of mind having the certainty to get the best purification as possible. There is no risk of product loss thanks to the complete monitoring of the system through sensors, the management of overpressure and pauses.
The devices will be available full time and for long term for purification.

InterSoft® X =>

Keeps Intelligence Simple & Smart. Its Best-In-Class design makes the Chemist's life easier.
It is easily accessible to multi-profile users with a minimum of training. Intuitive, this Gen5 "Push the boundaries" with the innovative Flash & Go, Load & Go and Boost & Go technologies. To develop a method, challenge Genius or, do it by yourself.

Genius™ =>

Your personnal Articifial Intelligence, embedded in InterSoft® X generates the best eco-(logical)-purification in the curent knowledge.
Run safely the method & Get your Products Pure!

A Unique feature, the Solvent Heater technology to control & regulate temperature =>

You become confident in the reproducibility of purification methods in a given environment and their site-to-site transfer. You have access to impossible purifications at room temperature, you improve and you have a better control of the solvent mixture (thermal exo/endo mix). This feature also annihilates environmental variations and enhances efficiency, detection limit, purity, charge and the fractions collection.

Flash&Go:

Flash your TLC plate using our mobile app., send the data automatically to InterSoft® X "Genius". You are set to run the purification.

Load&Go:

Load your sample liquid or solid though multi-way electrical valve. InterSoft® X "Genius" will manage column equilibration for you, sample loading and system cleaning.

Boost&Go:

Intelligent management of the flow rate increase to speed up safely the purification.

RFID

Flash & Prep columns, dry-loads,racks, loops identification & data implementation into Genius.

"TLC to Flash & Prep Chromatography"

Revolutionize your Thin Layer Chromatography with our dedicated smartphone app

Developed to help you and to save your precious time everyday, the app allows:

- An automatic detection of your compounds and the calculation of Rf and ΔCV (= ΔK).
- The direct (and secure) transmission of these informations to your Puriflash® system. "Genius" software will suggest the best method for a successful purification.
- To archive your data if you wish.

Flash & Go: Start with a "New TLC".

Take a picture of the TLC with your smartphone or download it from your library.

Your compounds will be detected automatically. Select the ones of interest with a tap.

Rf

ΔCV

The application calculates Rf and ΔCV (= ΔK). It indicates if the Rf are placed in the comfort zone to carry out your purification.

From the smallest ΔCV obtained on your TLC plate, the application gives you the level of difficulty of the separation.

Indicate the solvents, their proportions and your comments in the dedicated areas.

Save your TLC plate information. Send them to the email address of your choice or directly to your puriFlash® by bluetooth or wifi: the "Genius" software will recommend the best method for a successfull purification.

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"MY TLC" to save your data.

Archive your TLC and keep all the valuable data in one place. If you want to reuse the settings of a plate for a new separation, it is so easy, in a snap you can send it back to the puriFlash® of your choice.

"SETTINGS" to personalize your experience.

Pair your device with Bluetooth or Wifi to your puriFlash®.
Configure your app according to your preferences.
Access quickly and directly to our websites.

Download or get your app "Interchim® TLC" now

GET IT ON Google Play

Available on the App Store

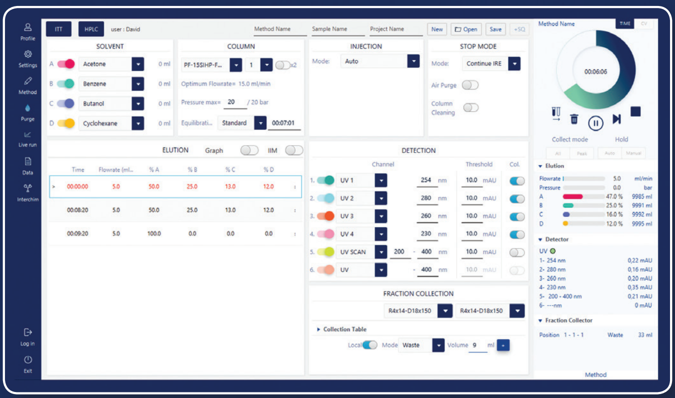
https://goo.gl/givKvL

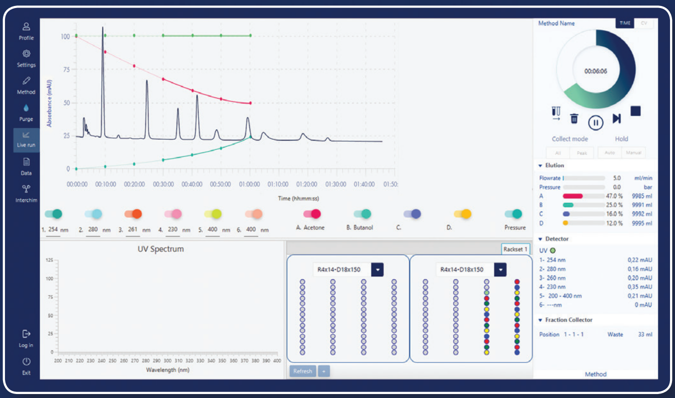
interchim®

Back to SUMMARY

InterSoft® X

Keeps Intelligence Simple, Smart





- Accessibility of multi-profile users with a minimum of training -

- Best-In-Class design that makes the Chemist's life Easier -

- "Push the boundaries" with Flash&Go, Load&Go and Boost&Go technologies intuitiveness -

- Challenge Genius, your Personal Artificial Intelligence, to develop the Purification Method, or do it by yourself -

Back to SUMMARY

Genius

Keeps Intelligence Simple, Smart

Whatever is your Sample,

from any of NP-TLC, NP-LC, NP-LC screening, RP-LC, RP-LC screening experiments,

Genius, your Personal Artificial Intelligence embedded in InterSoft® X, generates the best possible purification method in the current knowledge.

Run safely the method & Get your Products Pure!

[Patent Pending]

	Flash Purification PF-XS 420Plus*	Flash Purification PF-XS 520Plus*
Pump		
Flow rate	300mL/min	300mL/min
Pressure max.	20bar	20bar
Quaternary Gradient	yes	yes
Air purge	yes	yes
Washing discs	no	no
Pump washing disc (option pack)	no	no

Detector	Plus*	-UVextended	-Ultra	Plus*	-UVextended	-Ultra
UV: 200 - 400nm multi wavelength & scan collection	yes	no	no	yes	no	no
UV: 200 - 800nm multi wavelength & scan collection	no	yes	yes	no	yes	yes
Spectral view & purity confirmation		yes			yes	
iELSD Detection (option pack)		no			no	
pH/Conductimeter		no			no	

Injection	Plus*	-UVextended	-Ultra	Plus*	-UVextended	-Ultra
4 port electrical valve	no	no	yes	no	no	yes
6 port electrical valve w/loop		no			no	
6 port + 10 port electrical valves w/loop		no			no	
Injection mode: liquid - Dry-load		yes			yes	

	PF-XS 420Plus*	PF-XS 520Plus*
Column Selection valve		
14 port /6 position electrical valve	no	no
6 port electrical valve	no	no
System Optimization		
Tubings	1.6mm id	1.6mm id
Flow cell-optical length	0.3mm/40µL	0.3mm/40µL
Columns Holder		
Integrated	yes	yes
Pre-column holder	no	no
Fraction Collector		
Regular Collector	2 long racks 112 tubes 18x150mm	2 long racks 112 tubes 18x150mm
Unit control		
Touch screen 15"	yes	yes
USB	4	4
RJ45	yes	yes
Software		
Interchim® soft X "Genius"	no	yes
Interchim® soft ver. 5.1	yes	no
Safety		
Leak detection (pump, FC, ...)	no	no
Solvent tray w/drainage system	yes	yes
Collector w/drainage sytem	yes	yes
Solvent level monitoring	no	no
RFID	no	no
Fume Encloser	yes	yes
Size		
	W: 14"" - 35.5cm D: 18.5"" - 47cm H: 30"" - 77cm	W: 14"" - 35.5cm D: 18.5"" - 47cm H: 30"" - 77cm

Option pack have to be ordered with the purchase of the instrument.

Flash Purification PF-5.020	Flash Purification PF-5.020-5X	Flash Purification PF-5.050
300mL/min	300mL/min	250ml/min
20bar	20bar	50bar
yes	yes	yes
yes	yes	yes
no	no	yes
no	no	no
yes	yes	yes
pack-UVextended	pack-UVextended	pack-UVextended
yes	yes	yes
pack-iELSD	pack-iELSD	pack-iELSD
no	no	no
yes	no	no
no	yes	yes
no	no	no
yes	yes	yes
no	yes	no
no	no	no
1.6mm id	1.6mm id	1.6mm id
0.3mm/40µL	0.3 mm/40µL	0.3mm/40µL
yes	yes	yes
yes	no	yes
3 racks Gen5 132 tubes 18x150mm	3 racks Gen5 132 tubes 18x150mm	3 racks Gen5 132 tubes 18x150mm
yes	yes	yes
8	8	8
yes	yes	yes
yes	yes	yes
no	no	no
yes	yes	yes
yes	yes	yes
yes	yes	yes
yes	yes	yes
yes	yes	yes
yes	yes	yes
W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm

	Flash Purification Process PF-5.007
Pump	
Flow rate	750mL/min
Pressure max.	7bar
Quaternary Gradient	yes
Air purge	no
Washing discs	yes
Pump washing disc (option pack)	no
Detector	
UV: 200 - 400nm multi wavelength & scan collection	yes
UV: 200 - 800nm multi wavelength & scan collection	pack-UVextended
Spectral view & purity confirmation	yes
iELSD Detection (option pack)	no
pH/Conductimeter	no
Injection	
4 port electrical valve	no
6 port electrical valve w/loop	no
6 port + 10 port electrical valves w/loop	no
Injection mode: liquid - Dry-load	yes
Column Selection valve	
14 port /6 position electrical valve	no
6 port electrical valve	no
System Optimization	
Tubings	2.4mm id
Flow cell-optical length	0.3mm/80µL
Columns Holder	
Integrated	yes
Pre-column holder	yes
Fraction Collector	
Regular Collector	3 racks Gen5 132 tubes 18x150mm
Unit control	
Touch screen 15"	yes
USB	8
RJ45	yes
Software	
Interchim® soft X "Genius"	yes
Interchim® soft ver. 5.1	no
Safety	
Leak detection (pump, FC, ...)	yes
Solvent tray w/drainage system	yes
Collector w/drainage sytem	yes
Solvent level monitoring	yes
RFID	yes
Fume Encloser	yes
Size	
	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm

Option pack have to be ordered with the purchase of the instrument.

Preparative PF-5.125	Preparative PF-5.250	Ultra-Prep PF-5.400
250mL/min	250mL/min	125mL/min
125bar	250bar	400bar
yes	yes	yes
yes	yes	no
yes	yes	yes
pack-PWD	pack-PWD	pack-PWD
yes	yes	yes
pack-UVextended	pack-UVextended	pack-UVextended
yes	yes	yes
pack-iELSD	pack-iELSD	pack-iELSD
no	no	no
no	no	no
yes	no	no
no	yes	yes
yes	yes	no
no	no	no
pack-Multi	pack-Multi	no
1.6mm id	1.6mm id	n.c.
0.3mm/40µL	0.3mm/40µL	1.0mm/20µL
yes	yes	yes
yes	yes	no
3 racks Gen5 132 tubes 18x150mm	3 racks Gen5 132 tubes 18x150mm	3 racks Gen5 132 tubes 18x150mm
yes	yes	yes
8	8	8
yes	yes	yes
yes	yes	yes
no	no	no
yes	yes	yes
yes	yes	yes
yes	yes	yes
yes	yes	yes
yes	yes	yes
yes	yes	yes
W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm

	Peptides & Oligonucleotides PF-5.125P	Peptides & Oligonucleotides PF-5.250P
Pump		
Flow rate	250mL/min	125mL/min
Pressure max.	125bar	250bar
Quaternary Gradient	yes	yes
Air purge	yes	yes
Washing discs	yes	yes
Pump washing disc (option pack)	yes	yes
Detector		
UV: 200 - 400nm multi wavelength & scan collection	yes	yes
UV: 200 - 800nm multi wavelength & scan collection	pack-UVextended	pack-UVextended
Spectral view & purity confirmation	yes	yes
iELSD Detection (option pack)	pack-iELSD	pack-iELSD
pH/Conductimeter	no	no
Injection		
4 port electrical valve	no	no
6 port electrical valve w/loop	no	no
6 port + 10 port electrical valves w/loop	yes	yes
Injection mode: liquid - Dry-load	yes	yes
Column Selection valve		
14 port /6 position electrical valve	no	no
6 port electrical valve	pack-Multi	pack-Multi
System Optimization		
Tubings	1.0mm id	0.75mm id
Flow cell-optical length	1.3mm / 55µL	1.3mm/55µL
Columns Holder		
Integrated	yes	yes
Pre-column holder	yes	yes
Fraction Collector		
Regular Collector	3 racks Gen5 132 tubes 18x150mm	3 racks Gen5 132 tubes 18x150mm
Unit control		
Touch screen 15"	yes	yes
USB	8	8
RJ45	yes	yes
Software		
Interchim® soft X "Genius"	yes	yes
Interchim® soft ver. 5.1	no	no
Safety		
Leak detection (pump, FC, ...)	yes	yes
Solvent tray w/drainage system	yes	yes
Collector w/drainage sytem	yes	yes
Solvent level monitoring	yes	yes
RFID	yes	yes
Fume Encloser	yes	yes
Size		
	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm	W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm

Option pack have to be ordered with the purchase of the instrument.

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Proteins Purification PF-5.020B
100mL/min
20bar
yes
no
yes
yes
254nm & 280nm 200-to-400nm as an option*
no
* pack-UV
no
yes
no
yes
no
no
no
no
n.c.
n.c.
yes
no
3 racks Gen5 132 tubes 18x150mm
yes
8
yes
yes
no
yes
yes
yes
yes
yes
yes
W: 15.75" - 40cm D: 20.0" - 51cm H: 29.5" - 75cm

PF-XS 420Plus

very Small, very Powerfull

As compact as its price, it is designed for routine flash purifications. The technology & the unique quality of the pump will take you much further. Increase the pressure, the puriFlash® XS 420Plus will offer the same precision, linearity & repeatability and allows you to perform complex and sophisticated purifications.

up to 800G

300 mL/min

20 bar

Pump
Flow rate	300mL/min
Pressure max.	20bar

Quaternary Gradient
Air purge
Solvent tray with drainage system

Injection
Injection mode: liquid - Dry-load

Columns Holder
Integrated

Detector
UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector
2 long racks
112 tubes 18x150mm

System Optimization

Unit control
Touch screen 15"
USB x 4
RJ45

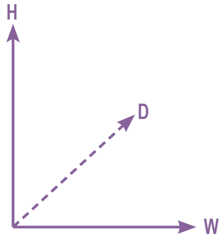
Software
Intersoft® ver. 5.1

Safety
Solvent tray w/drainage system
Collector w/drainage system
Fume Encloser

Available Peripheral
- puriVap™-6
- MS simple Quad APCI- 1200m/z or 2000m/z
- Refractive Index
- Super loop via external pump
- Auto-Sampler
- 2nd Collector
- CarouXel
- Multi-waste 1 inlet / 6 outlet electrical valve

pack-UVextended
UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-Ultra
UV : 200 - 800 nm
multi wavelength & scan collection
+ 4 port electrical PPS valve
P/N: ULTR00



W: 14" - 35.5cm
D: 18.5" - 47cm
H: 30" - 77cm

Option pack have to be ordered with the purchase of the instrument.

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puriFlash® XS 420Plus

Small Organic molecules	★★★★★
Impurities Identification	★★★☆☆
Natural Products	★★★★☆
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★☆☆☆
Traces Enrichment	★★★★★

InterSoft® ver. 5.1
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x4

Solvent tray w/drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go **an automated 4 port electric PPS valve manages solid injection (Dry-Load)**

Fraction Collector
2 long racks
112 tubes 18x150mm
Drainage system

Quaternary Gradient Pump
Air purge

PF-XS 420Plus + pack Ultra

Modular & Easy to Maintain
Built to last

Column i.d. up to => 90mm

Detection
PF-XS420Plus => UV: 200-400nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 0.3mm / 40µL

Smallest footprint on the market

Integrated flash cols holder

=> UV: 200-800nm

P/N: 1R1071

interchim

Accuracy & Repeatability

300 mL/min

up to 800G

20 bar

PF-XS 520Plus

very Small, very Powerfull, very Awesome

A concentrate of technology for unmatched performance.
Designed for routine flash purifications, the technology and unique quality of the pump will take you much further. Increase the pressure, the puriFlash® XS 520 Plus will offer the same precision, linearity and repeatability and allows you to perform complex and sophisticated purifications.

No matter whether you're an expert or not, Genius will support you to achieve the best purification as possible.

Pump

Flow rate	300mL/min
Pressure max.	20bar
Quaternary Gradient	
Air purge	
Solvent tray with drainage system	

Injection

Injection mode: liquid - Dry-load

Columns Holder

Integrated

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

2 long racks
112 tubes 18x150mm

System Optimization

Tubings	1.6mm id
Flow cell-optical length	0.3mm / 40µL

Unit control

Touch screen 15"
USB x 4
RJ45

Software

Intersoft® X "Genius"

Safety

Solvent tray w/drainage system
Collector w/drainage system
Fume Encloser

Available Peripheral

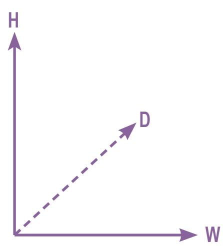
- puriVap™-6 ◉
- MS simple Quad APCI- 1200m/z or 2000m/z ○
- Refractive Index ○
- Super loop via external pump ○
- Auto-Sampler ○
- 2nd Collector ○
- CarouXel ○
- Multi-waste 1 inlet / 6 outlet electrical valve ○

pack-UVextended

UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-Ultra

UV : 200 - 800 nm
multi wavelength & scan collection
+ 4 port electrical PPS valve
P/N: ULTR00



W: 14" - 35.5cm
D: 18.5" - 47cm
H: 30" - 77cm

interchim®

Option pack have to be ordered with the purchase of the instrument.

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puriFlash® XS 520Plus

Small Organic molecules	★★★★★
Impurities Identification	★★★☆☆
Natural Products	★★★★☆
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★☆☆☆
Traces Enrichment	★★★★★

InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x4

Solvent tray w/drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go **an automated 4 port electric PPS valve manages solid injection (Dry-Load)**

Fraction Collector
2 long racks
112 tubes 18x150mm
Drainage system

Quaternary Gradient Pump
Air purge

PF-XS 520Plus + pack Ultra

Modular & Easy to Maintain
Built to last

Column i.d. up to => 90mm

Detection
PF-XS520Plus => UV: 200-400nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 0.3mm / 40µL

Smallest footprint on the market

Integrated flash cols holder

=> UV: 200-800nm

Flash & Go

Boost & Go

P/N: PFXS50

Accuracy
& Repeatability

300 mL/min

up to 800G

20 bar

PF 5.020

The partner of daily challenges

Access automation and more security. Thanks to embedded technology (RFID, leak & level sensors, ...) the working time is now devoted entirely to purification and no longer to the management of the instrument.

Pump

Flow rate	300mL/min
Pressure max.	20bar
Quaternary Gradient	
Air purge	
Solvent tray with drainage system	

Injection

4 port electrical PPS valve
Injection mode: liquid - Dry-load

Columns Holder

Integrated

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	1.6mm id
Flow cell-optical length	0.3mm / 40µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

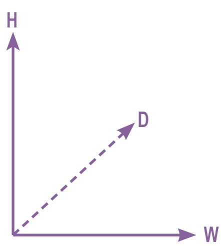
puriVap™-6	◉
MS simple Quad APCI- 1200m/z or 2000m/z	◉
Refractive Index	◉
Super loop via external pump	◉
Auto-Sampler	○
2nd Collector	◉
CarouXel	◉
Multi-waste 1 inlet / 6 outlet electrical valve	○

pack-UVextended

UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

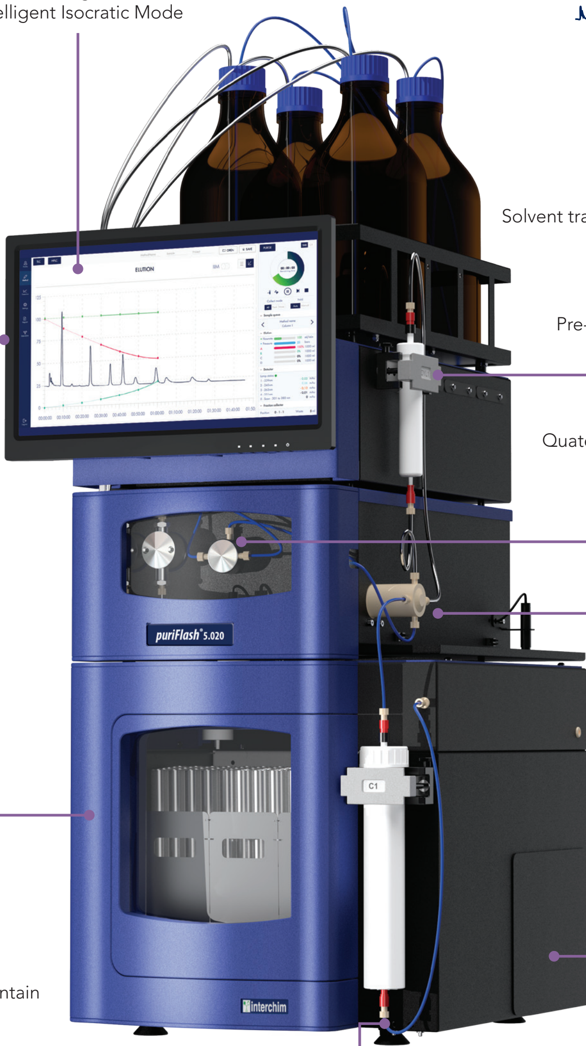
puriFlash® 5.020

Small Organic molecules	★★★★★
Impurities Identification	★★★☆☆
Natural Products	★★★★☆
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★☆☆☆
Traces Enrichment	★★★★★

θ° Controlled & Regulated

InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45



Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Air purge

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go™ technology: an automated 4 port electric PPS valve manages solid injection

Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Column i.d. up to => 90mm

Modular & Easy to Maintain
Built to last

Detection
PF-5.020: UV: 200-400nm
PF-5.020 + Pack-UVextended: UV: 200-800nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 0.3mm / 40µL

Integrated flash cols
& pre-cols holder

Flash & Go
Load & Go
Boost & Go
RFID

P/N: PFG5A0

interchim

Accuracy & Repeatability

300 mL/min

up to 800G

20 bar

PF 5.020-5X

Lab-Productivity

The use of 5 columns in sequential mode drastically enhances the throughput raising the number of daily purifications per chemist and labs, for a reduce working surface.

Pump

Flow rate	300mL/min
Pressure max.	20bar

Quaternary Gradient
Air purge
Solvent tray with drainage system

Injection

6 port electrical valve w/loop
Injection mode: liquid - Dry-load

Column Selection valve

14 port / 6 position electrical valve

Columns Holder

Integrated

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	1.6mm id
Flow cell-optical length	0.3mm / 40µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

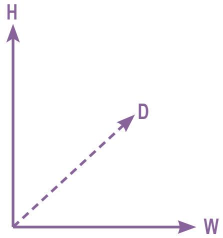
- puriVap™-6 ◉
- MS simple Quad APCI- 1200m/z or 2000m/z ◉
- Refractive Index ◉
- Super loop via external pump ◉
- Auto-Sampler ◉
- 2nd Collector ◉
- CarouXel ○
- Multi-waste 1 inlet / 6 outlet electrical valve ◉

pack-UVextended

UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

interchim®

Option pack have to be ordered with the purchase of the instrument.

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puriFlash® 5.020-5X

Small Organic molecules	★★★★★
Impurities Identification	★★★☆☆
Natural Products	★★★★☆
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★☆☆☆
Traces Enrichment	★★★★★

θ° Controlled & Regulated

Flash & Go
Load & Go
Boost & Go
RFID

interchim

P/N: PFG5X0

Accuracy & Repeatability

250 mL/min

up to 80mm i.d. Col.

50 bar

PF 5.050

Cross-over Flash /Prep

Access preparative chromatography. A single instrument to perform both flash and preparative purifications. Switch from normal to reverse phase and work with reusable columns. Finally, it achieve a better ecological approach and sustainable development of purification.

Pump

Flow rate	250mL/min
Pressure max.	50bar

Quaternary Gradient
Air purge
Washing discs
Solvent tray with drainage system

Injection

6 port electrical valve w/loop
Injection mode: liquid - Dry-load

Columns Holder

Integrated
Pre-column holder

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	1.6mm id
Flow cell-optical length	0.3mm / 40µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

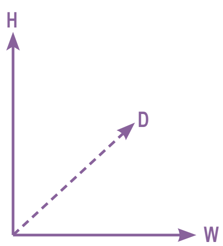
puriVap™-6	●
MS simple Quad APCI- 1200m/z or 2000m/z	●
Refractive Index	●
Super loop via external pump	●
Auto-Sampler	●
2nd Collector	●
CarouXel	●
Multi-waste 1 inlet / 6 outlet electrical valve	○

pack-UVextended

UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

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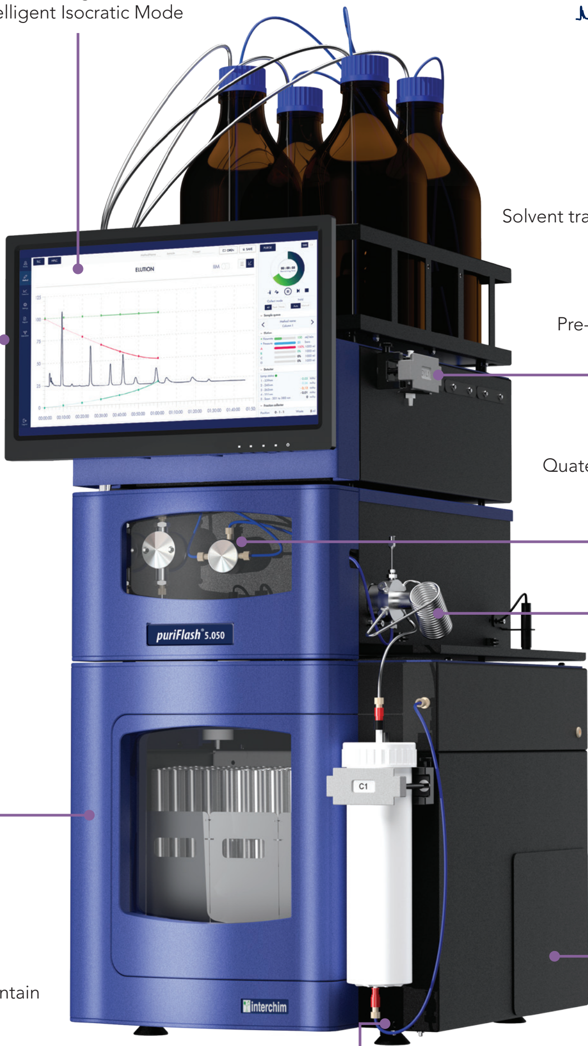
puriFlash® 5.050

Small Organic molecules	★★★★★
Impurities Identification	★★★☆☆
Natural Products	★★★★☆
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★★☆☆
Traces Enrichment	★★★★★

θ°Controlled & Regulated



Flash & Go
Load & Go
Boost & Go
RFID

P/N: PFG5C0

interchim

PF 5.007

Process - Kilo-Lab

750 mL/min
up to 145mm i.d. Col.
7 bar

Reliability & robustness with significant loading capacity.

Its reliability, its robustness over the time as well as its security features are the essential assets to make semi-continuous productions effective up to hundreds of grams of compound of interest.

Continuity of production on the same device independently of the scale-up factor.

Pump
Flow rate	750mL/min
Pressure max.	7bar

Quaternary Gradient
Washing discs
Solvent tray with drainage system

Injection
Injection mode: liquid - Dry-load

Columns Holder
Integrated
Pre-column holder

Detector
UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector
3 racks Gen5
132 tubes 18x150mm

System Optimization
Tubings	2.4mm id
Flow cell-optical length	0.3mm / 80µL

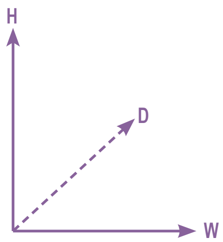
Unit control
Touch screen 15"
USB x 8
RJ45

Software
InterSoft® X "Genius"

Safety
Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral
puriVap™-6	●
MS simple Quad APCI- 1200m/z or 2000m/z	○
Refractive Index	○
Super loop via external pump	●
Auto-Sampler	○
2nd Collector	●
CarouXel	○
Multi-waste 1 inlet / 6 outlet electrical valve	○

pack-UVextended
UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00



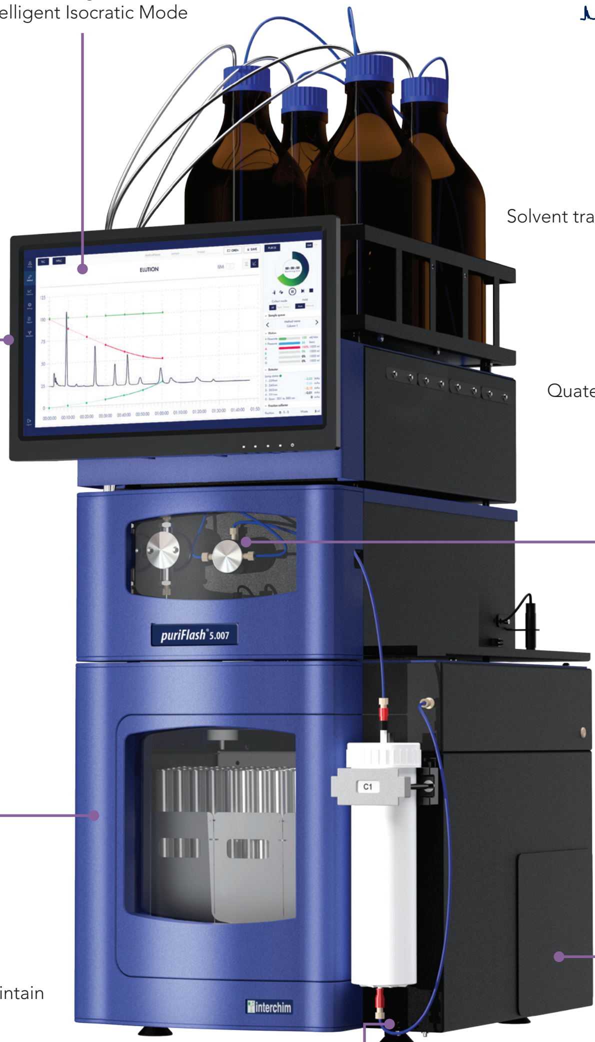
W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

puriFlash® 5.007

Small Organic molecules	★★★★★
Impurities Identification	☆☆☆☆☆
Natural Products	★★★☆☆
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★☆☆☆
Traces Enrichment	★★★★★

θ° Controlled & Regulated



Column i.d. up to => 145mm

Modular & Easy to Maintain
Built to last

Flash & Go | Load & Go | Boost & Go | RFID

P/N: PFG5L0

Accuracy & Repeatability

250 mL/min

up to 80mm i.d. Col.

125 bar

PF 5.125

Complex purifications with confidence

Factor 2X of working pressure vs. Cross-over Flash / Prep

Designed to truly perform preparative purification, it is suitable for both chemists and the purification needs of analytical services. It optimizes internal processes between departments. Beyond the classical applications, the purifications of complex matrices (natural products, ...) become accessible.

Pump

Flow rate	250mL/min
Pressure max.	125bar

Quaternary Gradient
Air purge
Washing discs
Solvent tray with drainage system

Injection

6 port electrical valve w/loop
Injection mode: liquid - Dry-load

Columns Holder

Integrated
Pre-column holder

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	1.6mm id
Flow cell-optical length	0.3mm / 40µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

puriVap™-6	◉
MS simple Quad APCI- 1200m/z or 2000m/z	◉
Refractive Index	◉
Super loop via external pump	◉
Auto-Sampler	◉
2nd Collector	◉
CarouXel	○
Multi-waste 1 inlet / 6 outlet electrical valve	◉

pack-UVextended ☑

UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD ☑

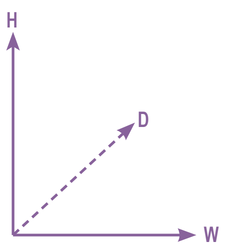
Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00

pack-PWD ☑

Pump washing disc
P/N: PFPWD0

pack-Multi ☑

6 port electrical valve
P/N: MULT00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

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puriFlash® 5.125

Small Organic molecules	★★★★★
Impurities Identification	★★★★☆
Natural Products	★★★★★
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★★★☆
Traces Enrichment	★★★★★

θ° Controlled & Regulated

InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45

Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Air purge
Washing Disc

Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go™ technology: an automated 6 port electric valve + 6 port electric valve manages solid injection

Column i.d. up to => 80mm

Modular & Easy to Maintain
Built to last

Detection
PF-5.125: UV: 200-400nm
PF-5.125 + Pack-UVextended: UV: 200-800nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 0.3mm / 40µL

Integrated cols holder

Flash & Go
Load & Go
Boost & Go
RFID

interchim

P/N: PFG5D0

Accuracy & Repeatability

250 mL/min

up to 80mm i.d. Col.

250 bar

PF 5.250

very Small, Hyper Powerfull

Maximum Versatility & Flexibility.

It brings a unique performance in all circumstances. It is adapted to all needs from routine purification to complex mixtures, impurity separation, or traces enrichment, ...

It is continuously ready to start multiple purifications in normal or reverse phase, flash or prep.

Pump

Flow rate	250mL/min
Pressure max.	250bar

Quaternary Gradient
Air purge
Washing discs
Solvent tray with drainage system

Injection

6 port + 10 port electrical valves w/loop
Injection mode: liquid - Dry-load

Columns Holder

Integrated
Pre-column holder

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	1.6mm id
Flow cell-optical length	0.3mm / 40µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

- puriVap™-6 ◉
- MS simple Quad APCI- 1200m/z or 2000m/z ◉
- Refractive Index ◉
- Super loop via external pump ◉
- Auto-Sampler ◉
- 2nd Collector ◉
- CarouXel ○
- Multi-waste 1 inlet / 6 outlet electrical valve ◉

pack-UVextended

UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

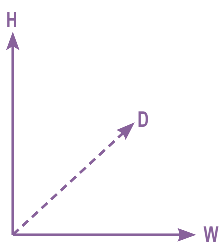
Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00

pack-PWD

Pump washing disc
P/N: PFPWD0

pack-Multi

6 port electrical valve
P/N: MULT00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

Tel.: +33 4 70 03 88 55 | Hotline: +33 4 70 03 73 01 | E-mail: interfine@interchim.fr | Fax: +33 4 70 03 82 60 | WWW.INTERCHIM.COM

puriFlash® 5.250

Small Organic molecules	★★★★★
Impurities Identification	★★★★★
Natural Products	★★★★★
Peptides, Oligonucleotides	★★★☆☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★★★★
Traces Enrichment	★★★★★

θ° Controlled & Regulated

InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45

Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Air purge
Washing Disc

Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go™ technology: an automated 6 port + 10 port electric valves manages solid injection

Column i.d. up to => 80mm

Modular & Easy to Maintain
Built to last

Integrated cols holder

Detection
PF-5.250: UV: 200-400nm
PF-5.250 + Pack-UVextended: UV: 200-800nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 0.3mm / 40µL

Flash & Go · Load & Go · Boost & Go · RFID

P/N: PFG5E0

interchim

Accuracy & Repeatability

125 mL/min

up to 60mm i.d. Col.

400 bar

PF 5.400

The Ultra-Purification

Method development and purification of rare & high added value compounds.

From method development to purification on the same instrument for more flexibility, saving time.

It is compatible with sub-2 micron column for maximum separating power.

Pump

Flow rate	125mL/min
Pressure max.	400bar

Quaternary Gradient
Washing discs
Solvent tray with drainage system

Injection

6 port + 10 port electrical valve w/loop

Columns Holder

Integrated

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	n.c.
Flow cell-optical length	1.0mm / 20µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, …)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

puriVap™-6	◉
MS simple Quad APCI- 1200m/z or 2000m/z	◉
Refractive Index	◉
Super loop via external pump	○
Auto-Sampler	◉
2nd Collector	○
CarouXel	○
Multi-waste 1 inlet / 6 outlet electrical valve	○

pack-UVextended

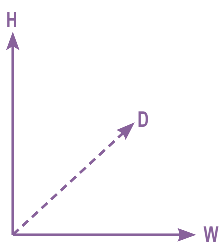
UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00

pack-PWD

Pump washing disc
P/N: PFPWD0



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

puriFlash® 5.400

Small Organic molecules	★★★★★
Impurities Identification	★★★★★
Natural Products	★★★★★
Peptides, Oligonucleotides	★★★★☆
Proteins, Bio-drugs	★★☆☆☆
Metabolites Isolation	★★★★★
Traces Enrichment	★★★★★

θ° Controlled & Regulated

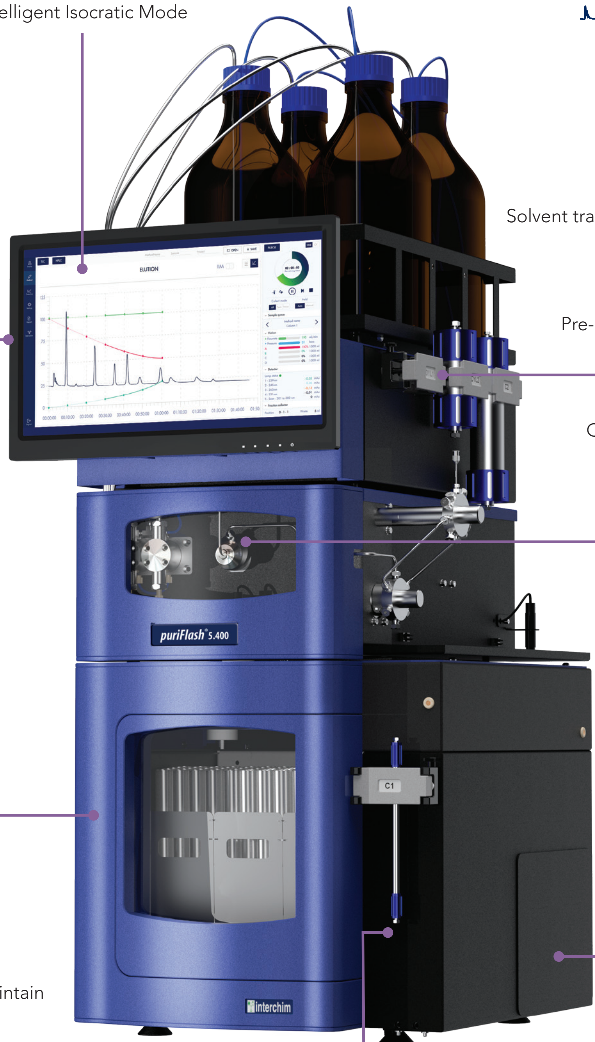
InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45

Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Washing Disc



Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go™ technology: an automated 6 port + 10 port electric valves manages solid injection

Column i.d. up to => 60mm

Modular & Easy to Maintain
Built to last

Detection
PF-5.400: UV: 200-400nm
PF-5.400 + Pack-UVextended: UV: 200-800nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 1.0mm / 20µL

Integrated cols holder

Flash & Go | Load & Go | Boost & Go | RFID

interchim

P/N: PFG5F0

Accuracy & Repeatability

250 mL/min

up to 80mm i.d. Col.

125 bar

PF 5.125P

The peptides specialist

Configured for aqueous and buffered mobile phases.

Purify with confidence, using mobile phases, a specific fluidic, and detection sensitivity suitable for peptides.

Pump

Flow rate	250mL/min
Pressure max.	250bar

Quaternary Gradient
Air purge
Washing discs
Pump washing disc
Solvent tray with drainage system

Injection

6 port + 10 port electrical valves w/loop
Injection mode: liquid - Dry-load

Columns Holder

Integrated
Pre-column holder

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	1.0mm id
Flow cell-optical length	1.3mm / 55µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

puriVap™-6	◉
MS simple Quad APCI- 1200m/z or 2000m/z	◉ ESI
Refractive Index	○
Super loop via external pump	◉
Auto-Sampler	◉
2nd Collector	◉
CarouXel	○
Multi-waste 1 inlet / 6 outlet electrical valve	◉

pack-UVextended

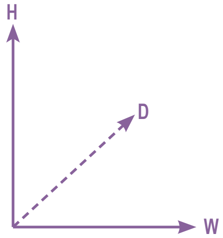
UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00

pack-Multi

6 port electrical valve
P/N: MULT00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

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puriFlash® 5.125P

Small Organic molecules	★★★★☆
Impurities Identification	★★★★☆
Natural Products	★★★★★
Peptides, Oligonucleotides	★★★★★
Proteins, Bio-drugs	★★★☆☆
Metabolites Isolation	★★★★★
Traces Enrichment	★★★★★

θ° Controlled & Regulated

InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45

Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Air purge
Washing Disc + Pump

Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go™ technology: an automated 6 port electric valve + 10 port electric valve manages solid injection

Column i.d. up to => 80mm

Modular & Easy to Maintain
Built to last

Integrated cols holder

Detection
PF-5.125P: UV: 200-400nm
PF-5.125P + Pack-UVextended: UV: 200-800nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 1.3mm / 55µL

Load & Go
Boost & Go
RFID

interchim

P/N: PFG5P0

Accuracy & Repeatability

125 mL/min

up to 60mm i.d. Col.

250 bar

PF 5.250P

Purification of complex mixtures of peptides

Maximum efficiency.

The use of small particle size combined with the reduction of dead volume makes possible to discriminate nearby peptides in terms of amino acid sequence.

Pump

Flow rate	125mL/min
Pressure max.	250bar
Quaternary Gradient	
Air purge	
Washing discs	
Pump washing disc	
Solvent tray with drainage system	

Injection

6 port + 10 port electrical valves w/loop
Injection mode: liquid - Dry-load

Columns Holder

Integrated
Pre-column holder

Detector

UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation

Fraction Collector

3 racks Gen5
132 tubes 18x150mm

System Optimization

Tubings	0.75mm id
Flow cell-optical length	1.3mm / 55µL

Unit control

Touch screen 15"
USB x 8
RJ45

Software

InterSoft® X "Genius"

Safety

Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral

puriVap™-6	◉
MS simple Quad APCI- 1200m/z or 2000m/z	◉ ESI
Refractive Index	○
Super loop via external pump	◉
Auto-Sampler	◉
2nd Collector	◉
CarouXel	○
Multi-waste 1 inlet / 6 outlet electrical valve	◉

pack-UVextended

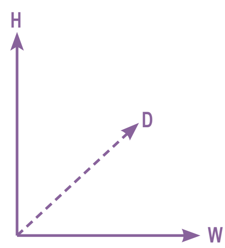
UV : 200 - 800 nm
multi wavelength & scan collection
P/N: UVEX00

pack-iELSD

Integrated Evaporative Light Scattering Detector
SAGA technology
P/N: ELSD00

pack-Multi

6 port electrical valve
P/N: MULT00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

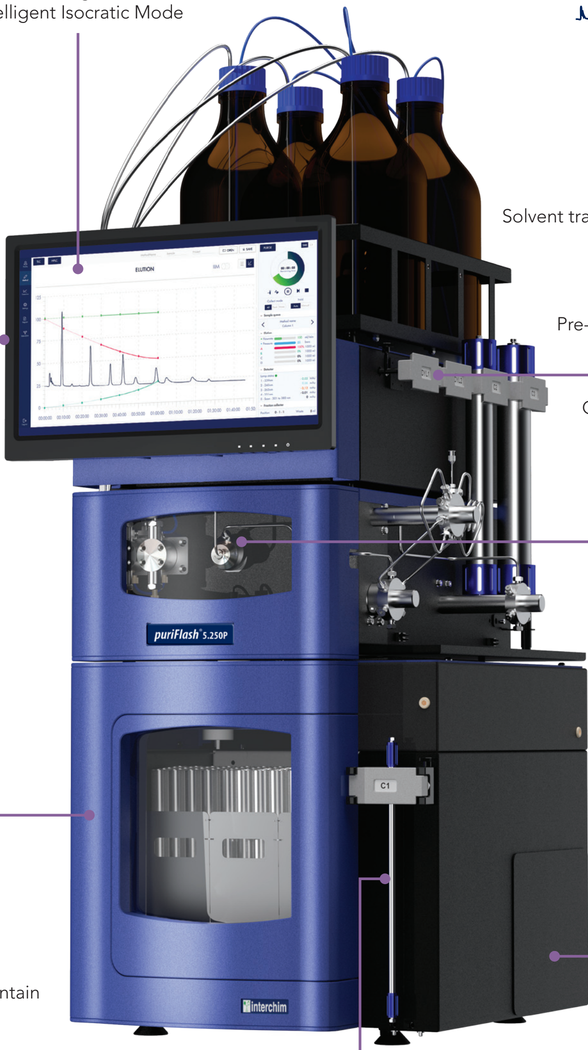
puriFlash® 5.250P

Small Organic molecules	★★★★☆
Impurities Identification	★★★★★
Natural Products	★★★★★
Peptides, Oligonucleotides	★★★★★
Proteins, Bio-drugs	★★★☆☆
Metabolites Isolation	★★★★★
Traces Enrichment	★★★★★

θ° Controlled & Regulated

InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45



Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Air purge
Washing Disc + Pump

Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Injection
Liquid or Dry-Load injection w/column equilibration.

Load & Go™ technology: an automated 6 port electric valve + 10 port electric valve manages solid injection

Column i.d. up to => 60mm

Modular & Easy to Maintain
Built to last

Detection
PF-5.250P: UV: 200-400nm
PF-5.250P + Pack-UVextended: UV: 200-800nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)
Flow Cell: 1.3mm / 55µL

Integrated cols holder

Load & Go
Boost & Go
RFID

P/N: PFG5Q0

PF 5.020B

The proteins specialist

Pragmatic & Kiss for proteins purification.

Convenient accessibility to protein purification for all types of users.

100 mL/min

up to 50mm i.d. Col.

20 bar

Pump
Flow rate	100mL/min
Pressure max.	20bar

Quaternary Gradient
Washing discs
Pump washing disc
Solvent tray with drainage system

Injection
6 port electrical valve w/loop

Columns Holder
Integrated

Detector
UV: 254nm & 280nm
pH/Conductimeter

Fraction Collector
3 racks Gen5
132 tubes 18x150mm

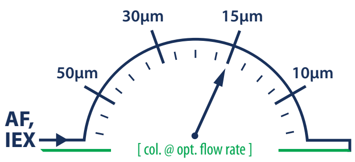
System Optimization
Tubings	n.c.
Flow cell-optical length	n.c.

Unit control
Touch screen 15"
USB x 8
RJ45

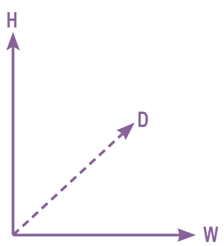
Software
InterSoft® X "Genius"

Safety
Leak detection (pump, FC, ...)
Solvent tray w/drainage system
Collector w/drainage system
Solvent level monitoring
RFID
Fume Encloser

Available Peripheral
- puriVap™-6 ○
- MS simple Quad APCI- 1200m/z or 2000m/z ○
- Refractive Index ○
- Super loop via external pump ◉
- Auto-Sampler ◉
- 2nd Collector ○
- CarouXel ○
- Multi-waste 1 inlet / 6 outlet electrical valve ○



pack-UV
UV : 200 - 400nm
multi wavelength & scan collection
Spectral view & purity confirmation
P/N: PKUV00



W: 15.75" - 40.0cm
D: 20.0" - 51.0cm
H: 29.5" 75.0cm

Option pack have to be ordered with the purchase of the instrument.

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puriFlash® 5.020B

Small Organic molecules	☆☆☆☆☆
Impurities Identification	☆☆☆☆☆
Natural Products	☆☆☆☆☆
Peptides, Oligonucleotides	☆☆☆☆☆
Proteins, Bio-drugs	★★★★★
Metabolites Isolation	★★★☆☆
Traces Enrichment	☆☆☆☆☆

θ° Controlled & Regulated

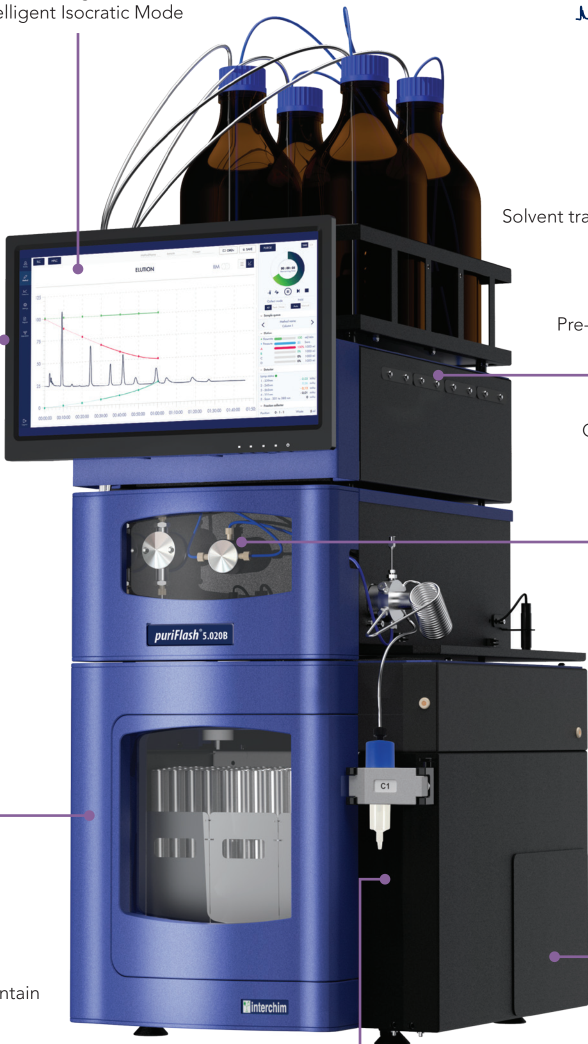
InterSoft® X "Genius"
User-friendly
Click & Drag Gradient
Intelligent Isocratic Mode

Unit Control
15" touch screen
Remote Control
USB x8 - RJ45

Solvent tray w/drainage system

Pre-cols holder

Quaternary Gradient Pump
Washing Disc + Pump



Fraction Collector
3 racks Gen5
132 tubes 18x150mm
Drainage system

Injection
Liquid injection
w/column equilibration.

Load & Go™ technology:
through automated
6 port electric valve

Column i.d. up to
=> 50mm

Modular & Easy to Maintain
Built to last

Detection
PF-5.020B: UV: 254 & 280nm
PF-5.020B + Pack UV: UV: 200-400nm
(Multi wavelength & Scan collection
Spectral view & Purity confirmation)

Integrated cols holder

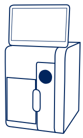
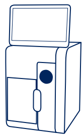
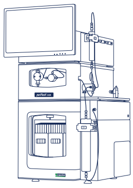
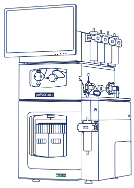
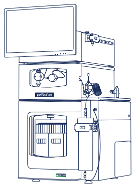
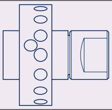
Load & Go

Boost & Go

RFID

P/N: PFG5B0

interchim

		Flash Purification				
						
Peripheral devices		**PF-XS 420Plus**	**PF-XS 520Plus**	**PF-5.020**	**PF-5.020-5X**	**PF-5.050**
puriVap™-6		x	x	x	x	x
MS simple Quad APCI- 1200 or 2000m/z				x	x	x
Refractive Index				x	x	x
Super loop via external pump				x	x	x
Auto-Sampler					x	x
2nd Collector				x	x	x
CarouXel				x		x
Multi-waste 1 inlet / 6 outlet electrical valve					x	

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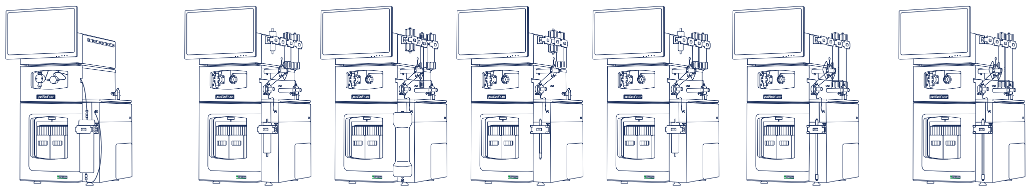


Flash Purification Process	Preparative			Peptides & Oligonucleotides		Proteins Purification
PF-5.007	PF-5.125	PF-5.250	PF-5.400	PF-5.125P	PF-5.250P	PF-5.020B
x	x	x	x	x	x	
	x	x	x	x - ESI	x - ESI	
	x	x	x			
x	x	x		x	x	x
	x	x	x	x	x	x
x	x	x		x	x	
	x	x		x	x	

Interchim® puriVap-6™

Simple & Smart - 6 positions Evaporator

- 6 channels to run up to 6 samples (independent or simultaneous)
- Sample volumes from 2mL up to 60mL
- PID temperature control with digital display up to 100°C
- Temperature increases quickly in the first minutes (up to 4°C/min)
- Dedicated nitrogen flow regulator control for each sample
- Nitrogen blow in combination of heating concentration mode
- Possibility to choose the best position of nitrogen needle to ensure the most efficient evaporation
- Anti-corrosive material (PTFE)
- "Open view" to control sample volume level during the evaporation process
- Dry aluminium block heating mode to avoid potential water vapor interference
- Small difference temperature between channels (RSD: 0;11%)
- Dry aluminium block heating mode to avoid potential water vapor interference
- Low gas consumption (nitrogen gas supply : 1-2 bar max I flow rate: 7-8L/min)

Compatible vial sizes

Sample volume: 2mL up to 60mL

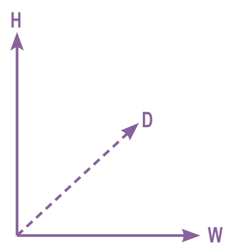
Vial size	Volume
28x140mm	60mL
28x95mm	40mL
40ml - 1mL tail tube	40mL
18x150mm	25mL
16x150mm	22mL
16x100mm	12mL
13x100mm	10mL
12x32mm	2mL

Solvent evaporation time

Sample volume : 5mL - Nitrogen gas supply : 1 bar

Solvent	Boiling point (°C)	Setting temperature (°C)	Evaporation time (min)
methanol	64,7	40	21
acetonitrile	82	50	19
ethyl acetate	77,1	50	14
hexane	68	55	8
methylene chloride	39,6	40	7
water	100	90	50

Part no.	Description	Qty
Interchim® puriVap-6™		
AWZ5R0	Interchim® puriVap6 Nitrogen Evaporator	1x1u
	Included:	
	6x spacer (AWZ7L0)	
	6x 40mL vials graduated	
	6x nitrogen needle (AWZ7K0)	
Accessories		
AWZ7K0	Nitrogen needle	1x1u
AWZ7L0	Spacer M/F M4 L40	1x1u
AWZ7M0	Aluminium block OD 18mm	1x1u
AWZ7P0	Aluminium block 16mm - Vials 2mL	1x1u
AWZ7Q0	Aluminium block 13mm - Vials 2mL	1x1u

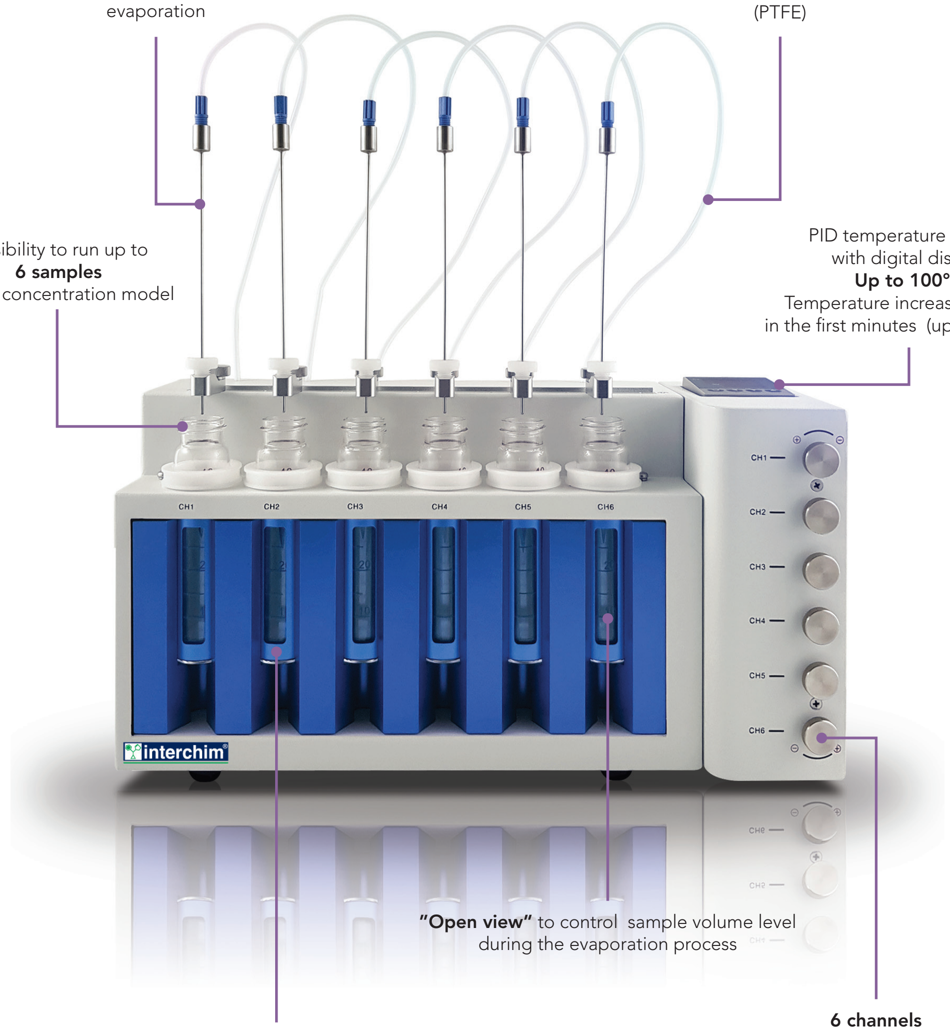


W: 13.38" - 34.0cm
D: 4.33" - 11.0cm
H: 6.7" 17.5cm

interchim®

Tel.: +33 4 70 03 88 55 I Hotline: +33 4 70 03 73 01 I E-mail: interfine@interchim.fr I Fax: +33 4 70 03 82 60 I WWW.INTERCHIM.COM

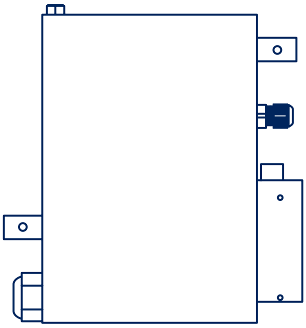
puriVap™6


Nitrogen blow in combination
of heating concentration mode
Possibility to choose the best
position of nitrogen needle
to ensure the most efficient
evaporation
Anti-corrosive material
(PTFE)
Possibility to run up to
6 samples
Parallel concentration model
PID temperature control
with digital display
Up to 100°C
Temperature increases quickly
in the first minutes (up to 4°C/min)
CH1
CH2
CH3
CH4
CH5
CH6
interchim
"Open view" to control sample volume level
during the evaporation process
Dry aluminium block heating mode to avoid
potential water vapor interference
Small temperature difference between channels
(RSD: 0.11%)
6 channels
(independent or simultaneous)
Dedicated nitrogen flow regulator
control for each sample

puriFlash® 5.020-5X

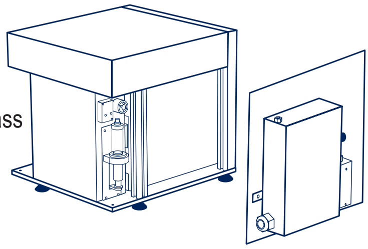
puriFlash® 5.020

puriFlash® 5.050



Interchim® Preparative Integrated ELSD

Secure your purification by a Universal Detector



- Even non chromophore are now visible
- Specifically developed for purification Mass response detector
- Full control of the split and the inlet flow
- True purification design nebulizer: no clogging
- Large dynamic range: mg up to hundred g
- Easy access /easy maintenance

Optimized **Low Temperature** Technology

Quicker droplets drying at lower temperature

Preserves the integrity of termo-sensitive compounds

puriFlash® 5.050

puriFlash® 5.250P

Features

Low Temperature Technology:
This technology provides greater sensitivity due to both the nebulizer that enables droplets selection and effective photomultiplier.
With this patented technology nebulizer, the droplets dry-up faster at low temperature, providing appropriate signal intensities for the semi-volatile compounds. This technology requires no additional peripheral, such as a nebulizer with heating system (spray chamber) or an evaporation tube (Peltier cooling) that can degrade the heat-sensitive compounds.
- Dynamic Gain SAGA
- Detection: high sensitivity photodiode
- Source: LED (470 nm)
- Ambient temperature to 100 ° C
- Dynamic Split: 40 .mu.l / min sample in DEDL
- Sensitivity: <100 ng caffeine (LOD)
- Gas: 2.5 l / min - 2 bar

puriFlash® 5.250

puriFlash® 5.125P

puriFlash® 5.400

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Interchim® Auto-Sampler puriFlash®AS-1

Preparative LC Auto-Sampler

Through puriFlash® system:
Injection
Liquid injection w/column equilibration.

Load & Go

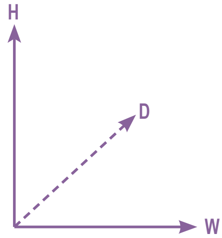
Load & Go™ technology: through automated 6 port electric valve

Injection volume:
from 500µL up to 300mL

Needle for septum piercing
- 3 external solvent ways
- sample injection and wash
- bracketing injection mode
- Needle washing

Temperature control of the rack:
4°C to RT (option)

1 rack /slots for different test tubes capacity:
96 deep well plates, 2.5mL vials....
up to 1 liter bottles & custom racks



W: 14" - 37.0cm
D: 15" - 39.0cm
H: 18" 46.0cm

P/N: LO8850

Interchim® puriFlash® MS

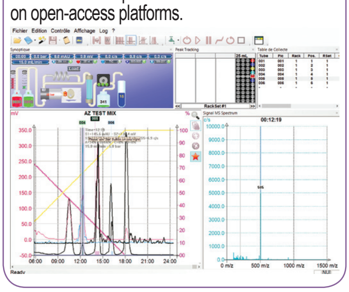
Mass triggered fraction collection for NP & RP Flash Purification & prep-LC

Unique Interchim® design Dynamic split & dilution:

- High-speed work with all columns sizes without generating backpressure
- Integrated post-split dilution to adjust the concentrations used in the MS source (no concentration limit - no signal saturation)
- Normal & Reverse Phase
- Intelligent Pilot of the puriFlash® system
- Normalized Scale signals MS, UV, ELSD (6 acquisition signals)

Compact Single Quad - APCI

Real-time reaction monitoring of batch reactions. The hood-based puriFlash MS reduces the burden on open-access platforms.



puriFlash® MS (1200 m/z): 1H5460
puriFlash® MS (2000 m/z): 1G6770

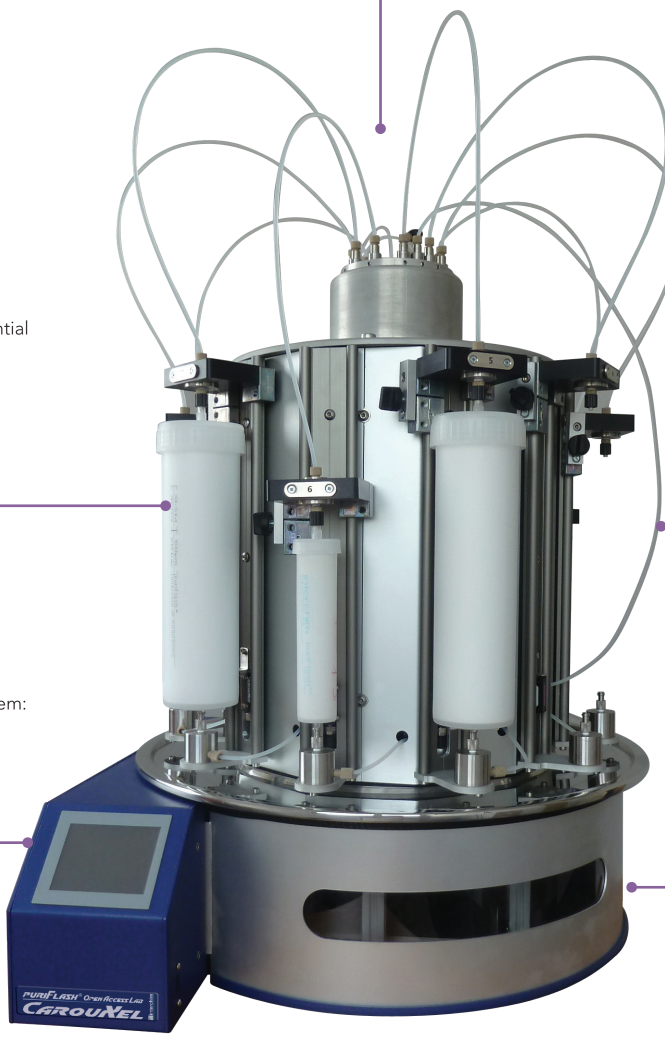
	puriFlash® MS for small molecule, synthetic organic chemists. Upgraded specs for pos/neg switching, faster scanning & higher flow rate	puriFlash® MS-HMW for large molecules - peptide synthesis, polymer chemistry & natural products
Sources :	APCI - (ESI option)	APCI or ESI
Patented API:	orthogonal ion sampling from heated capillary allows for small single turbo pump.	orthogonal ion sampling from heated capillary allows for small single turbo pump.
Positive/Negative Ionization	Simultaneous Analysis	Simultaneous Analysis
Flow rate range ESI	10 µL/min - 1 mL/min	10µL/min - 1mL/min
Flow rate range APCI	10 µL/min - 2 mL/min	10µL/min - 2mL/min
mass range (m/z)	10 to 1200	10 to 2000
Scan rate (m/z-units per second)	10000	10000
Resolution (m/z-unites FWHM)	0.5 - 0.7	0.5 - 0.7
Sensitivity (SIM - S/N de 10 pg Reserpine, FIA 5 µl injection à 100 µl/min)	100:1	100:1
Accuracy (m/z)	0.1	0.1
Stability (m/z-units per 24 hour period: 18 - 24 °C)	0.1	0.1

Interchim® puriFlash® MS platform

makes Purification Easier, Intuitive & Productive

puriFlash® Open Acess Lab CarouXel

Increase your productivity



P/N: JO3750

Interchim® RI IOTA 2

Differential refractive Index Detector

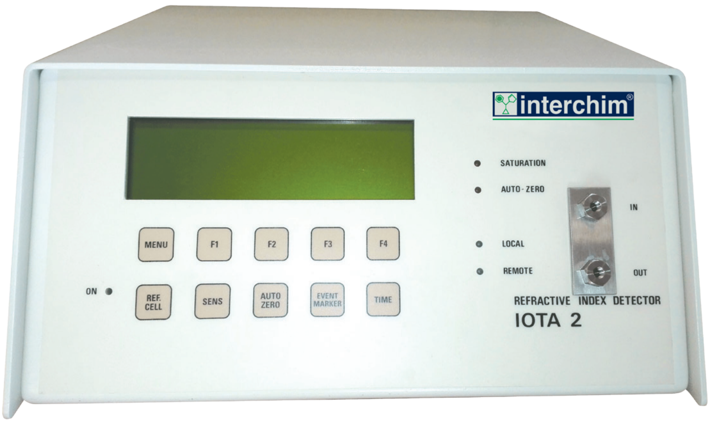
- High stability & sensitivity
- Universal non destructive detector for Flash & prep-LC

High stability
The unique and patented system provides a fully symetrical in line beam, specifically designed to avoid all external vibration problems.

Fully automatic

Real autozero system, microprocessor control, push-button reference cell filling, RS32 interface...

Analytical or Preparative chromatography
Differential Refractometer is designed to offer high detector stability and sensitivity. Three different cells are available for analytical or preparative analysis.



P/N: FSQ600

Large sensitivity range
Light source: 940nm
Sensitivity
Range:
1/16. 10-5 to 64.10-5 ΔRIU in 11 steps
Noise:
10-8 DRIU(analytical), 3.10-6 ΔRIU (preparative)
Time constants: 0; 0,5s; 2s; 5s
Drift: <5.10-7 ΔRIU/h (analytical),
5.10-8 ΔRIU/h (preparative)

Automatic reference cell filling
Linearity
5.10-3 ΔRIU (analytical) ;
5.10-2 ΔRIU (preparative)
Cells
Cell volume: 8 µl (analytical),
40 µl (preparative)
Cell angle: 45 °(analytical),
10° or 3° (preparative)
Flow rate: 0.05 to 20ml/mn (analytical),
1 to 200 ml/mn (preparative)
Maximum pressure: 5 bar

Autozero
Signal Outputs
Autozero: by the keyboard
Event Mark: by the keyboard end external
Recorder output: 1 V and 10 mV
RS 232 C Interface
Physical specifications:
Height 140mm; Width 320mm;
Length 320mm; Weight 15 kg
Power requirements:
220V or 110 V (50/60 Hz)

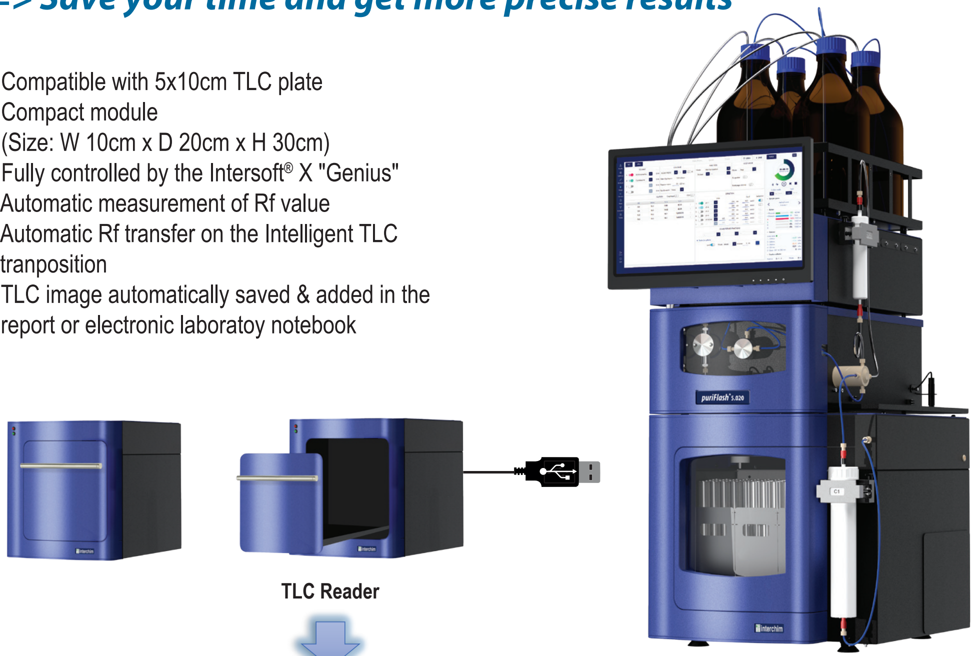
Interchim® TLC reader

Directly linked to the puriFlash®, the TLC reader will make your TLC-Flash transfer faster.

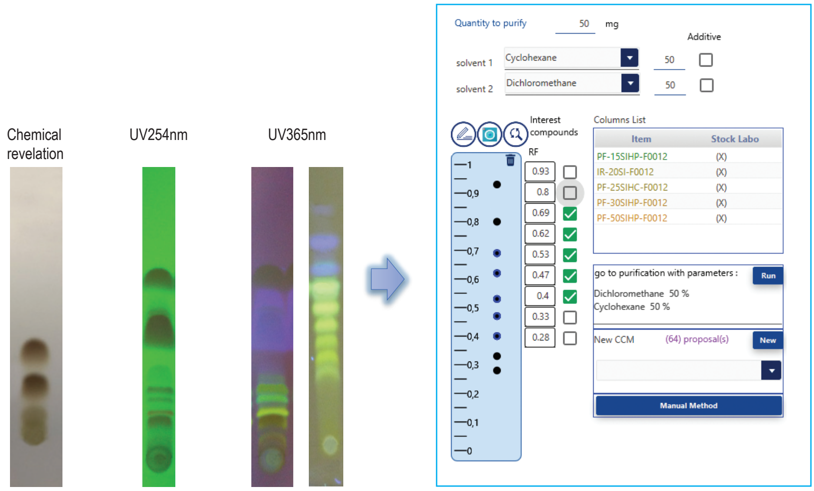
It allows an automatic recognition of compounds, solvent front and deposit line on the TLC thanks to different UV lamps 254nm, 365nm & visible light.

No more need to circle spots and manually calculate all Rf => Save your time and get more precise results

- Compatible with 5x10cm TLC plate
- Compact module (Size: W 10cm x D 20cm x H 30cm)
- Fully controlled by the Intersoft® X "Genius"
- Automatic measurement of Rf value
- Automatic Rf transfer on the Intelligent TLC tranposition
- TLC image automatically saved & added in the report or electronic laboratoy notebook



TLC Reader



Direct integration of results into Intersoft® X "Genius"

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		Cond.	PF-XS 520Plus	PF-5.020	PF-5.020-5X	PF-5.050	PF-5.007	PF-5.125	PF-5.250	PF-5.400	PF-5.125P	PF-5.250P
Detector												
FJ6720	Manometer ELSD	1u		x	x	x		x	x	x	x	x
1H3490	Compressor for integrated ELSD without quiet cover	1u		x	x	x		x	x	x	x	x
Valves												
AYHDV0	Purge Valve+kit (for Flash configuration) for PF Gen5	1u		x	x	x	x	x	x		x	x
AYHDW0	Purge Valve+kit (for Prep configuration) for PF Gen5	1u				x		x	x	x	x	x
Column Holder												
AYHDX0	Integrated column holder for F0800 Flash column + fitting	1u		x	x	x		x	x			
AYHDY0	Integrated column holder for 50mm ID Prep column + fittings	1u				x		x	x	x	x	x
PF4530	Stand Alone for Flash configuration+kit	1u	x	x	x	x		x	x			
DZ5200	Luer connections kit for Large Columns	1u	x	x	x	x		x	x			
LV8210	Stand Alone for Prep configuration+kit	1u				x		x	x	x	x	x
JV5220	Semi-Prep and Prep Adaptation kit	1u				x		x	x		x	x
Fraction Collector												
AYHDZ0	Extractor with 2 extraction tubes+kit (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
1R8570	Extractor with 2 extraction tubes+kit (for XS)	1u	x									
AYHE00	Funnel Rack for PF Gen5	1u		x	x	x	x	x	x	x	x	x
FI201A	Tygon Tubing SE-200 (OD 14.3mm; ID: 9.5mm),15meters	1u		x	x	x	x	x	x	x	x	x
1R8580	13x73mm rack (for XS)	1u	x									
1R8590	13x100mm rack (for XS)	1u	x									
1R8600	16x150mm rack (for XS)	1u	x									
1R8610	18x150mm rack (for XS)	1u	x									
1R8620	21x150 mm rack (for XS)	1u	x									
1R8630	25x150mm rack (for XS)	1u	x									
1R8640	28x150mm rack (for XS)	1u	x									
1R8650	29.5x200mm rack (for XS)	1u	x									
1R8660	Rack for 250mL Schott bottles (for XS)	1u	x									
AYHE10	13x73mm rack (for PF Gen5)	1u		x	x	x		x	x	x	x	x
AYHE30	13x100mm rack (for PF Gen5)	1u		x	x	x		x	x	x	x	x
AYHE40	16x150mm rack (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHE50	18x150mm rack (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHE60	21x150mm rack (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHE70	25x150mm rack (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHE80	28x150mm rack (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHE90	29.5x200mm rack (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHEA0	Rack for 250mL Schott bottles (for PF Gen5)	1u		x	x	x	x	x	x	x	x	x
AYHEB0	Tube holding claw 13mm	50u	x	x	x	x		x	x	x	x	x
AYHEC0	Tube holding claw 16mm	50u	x	x	x	x	x	x	x	x	x	x
AYHED0	Tube holding claw 18mm	50u	x	x	x	x	x	x	x	x	x	x
AYHEE0	Tube holding claw 21mm	50u	x	x	x	x	x	x	x	x	x	x
AYHEF0	Tube holding claw 25mm	50u	x	x	x	x	x	x	x	x	x	x
AYHEG0	Tube holding claw 28mm	50u	x	x	x	x	x	x	x	x	x	x
AYHEH0	Tube holding claw 29.5mm	50u	x	x	x	x	x	x	x	x	x	x
BH3901	Tubes 13x100mm	1000u	x	x	x	x		x	x	x	x	x
BX5400	Tubes 16x150mm	1000u	x	x	x	x	x	x	x	x	x	x
AW3842	Tubes 18x150mm	500u	x	x	x	x	x	x	x	x	x	x
1Q5350	Tubes 18x180mm	100u	x	x	x	x	x	x	x	x	x	x
FL1120	Tubes 21x150mm	500u	x	x	x	x	x	x	x	x	x	x
BH3911	Tubes 25x150mm	500u	x	x	x	x	x	x	x	x	x	x
DT8250	Tubes 29.5x200mm	50u	x	x	x	x	x	x	x	x	x	x

		Cond.	PF-XS 520Plus	PF-5.020	PF-5.020-5X	PF-5.050	PF-5.007	PF-5.125	PF-5.250	PF-5.400	PF-5.125P	PF-5.250P
Unit Control												
DV4120	Keyboard AZERTY	1u	x	x	x	x	x	x	x	x	x	x
LO4300	Keyboard QWERTY	1u	x	x	x	x	x	x	x	x	x	x
0A8280	Premium stylus	1u	x	x	x	x	x	x	x	x	x	x
Solvent safety												
DV2760	Safety solvent caps kit (4 units)	1u	x	x	x	x		x	x	x	x	x
JO1620	Safety solvent cap - tubing 3/16"	1u					x					
IO6930	Safety waste cap (with container 5L+filter)	1u	x	x	x	x		x	x	x	x	x
JO4500	Safety waste cap (with container 20L+filter)	1u	x	x	x	x	x	x	x	x	x	x
Loop Injection												
AYHEJ0	100µL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEK0	250µL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEL0	500µL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHET0	1mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEU0	2mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEV0	5mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEW0	10mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEX0	20mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEY0	40mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
AYHEZ0	50mL Stainless Steel Loop with RFID tag	1u			x	x		x	x	x	x	x
Others accessories												
DZ7360	Ballasting kit for 1/8" tubing	5u	x	x	x	x		x	x	x	x	x
DZ7361	Ballasting for 1/8" tubing	1u	x	x	x	x		x	x	x	x	x
FV1290	Ballasting kit for 3/16" and 1/8" tubing	5u					x					
AXF7I0	Magic box Flash (tool box)	1u	x	x								
AXF7K0	Magic box Flash (tool box)	1u			x							
AXF7L0	Magic box Flash (tool box)	1u						x	x			
AXF7M0	Magic box Flash (tool box)	1u									x	
AXF7P0	Magic box Flash (tool box)	1u										x
AXF7S0	Magic box Flash (tool box)	1u					x					
AXF7T0	Magic box Flash (tool box)	1u				x						
AXF7Q0	Magic box Flash (tool box)	1u								x		
AYHF00	Back Pressure Regulator 20psi+kit	1u	x	x	x	x		x	x			
FV1160	Adaptation kit for F0800 & F1600 format column	1u	x									
0C1570	Serial communication cable male/female (3meters)	1u	x									
0C1690	Serial communication cable female/female (3meters)	1u	x									
AYHF20	Trolley	1u	x	x	x	x	x	x	x	x	x	x

Consumables & Accessories

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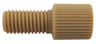
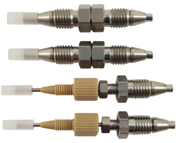
puriFlash® Generation 4

				Recommendation: Normal Use	
	P/N	**Designation**	**Qty/pack**	**Every 6 months**	**Every 24 months**
	**1L6210**	SP-20 Microns Frit Replacement	1	x	
	**FO0170**	SP-Adapter 1/4" 28 Male- Luer Male	1	x	
	**GO2320**	SP-Boucle Valco 2CC	1		x
	**GV1680**	SP-Micro-Mate Female Luer to 1/4"-28 Standard Thread Stainless Steel	2		x
	**GV1690**	SP-Tefzel Ferrule With Stainless Steel Lock Ring 1/8"	10	x	
	**GV1700**	SP-Short 1/8" Litetouch Male Nut Peek Natural	10	x	
	**GV1710**	SP-Superflangeless Male Nut 1/8" Peek Natural	10	x	
	**GV1720**	SP-Ferrule 1/8"	10		x
	**GV1730**	SE-Ecrou 1/8"	10		x
	**HO2560**	SP-Stainless Steel Adapter For Injection	1		x
	**IO6960**	SP-Suction Tube 1.5m + Peek Nut +Tefzel Ferrule + Spring (x4)	1		x
	**JV5220**	SP-PuriFlash® Spare Parts Semi-Prep And Prep Kit-PF4100/PF4250	1		x
	**NR0860**	SP-Union Volume Mort 1/16" -1/16" Peek Seul	1	x	
	**PFS740**	SP-Fitting 1/4" 28 F- Luer Lock M Peek	1	x	
	**PFS770**	SP-1/4-28 Male to Luer Lock MalE	2	x	
	**PFS920**	SP-Clapet 8MM - IIB89	1		x
	**PFS930**	SP-Clapet 10MM - IIB88	1		x

Recommendation: Intensive Use

Every 3 months	Every 12 months	XS420 plus	PF215	PF430	PF450	PF4125	PF4250
x			x	x	x	x	x
x		x	x	x	x	x	x
	x				x	x	x
	x	x		x	x	x	x
x		x	x	x	x	x	x
x		x	x	x	x	x	x
x		x	x	x	x	x	x
	x				x	x	x
	x					x	x
	x				x	x	x
	x		x	x	x	x	x
	x					x	x
x					x	x	x
x		x	x	x	x	x	
x		x		x	x	x	x
	x	x	x	x	x		
	x	x	x	x	x	x	x

puriFlash® Generation 4

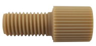
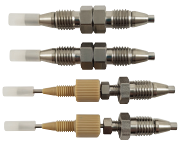
				Recommendation: Normal Use	
	P/N	**Designation**	**Qty/pack**	**Every 6 months**	**Every 24 months**
	**PFS940**	SP-Joint Piston - IID36	2		x
	**PFS960**	SP-Detector Flow Cell 0.3 MM	1		
	**PFS970**	SP-Detector Deuterium Lamp	1		x
	**PFU060**	SP-Tube Peek OD: 1/8" -ID: 1.59MM-L: 120MM	10	x	
	PFW490	SP-Tube Peek OD: 1/8" -ID: 1.59MM-L: 600MM	1	x	
	**LV7070**	SE-Fuses 500mA (Detector)	2		
	PFS980	SP-Fuses 1.6A for 220V (Collector and Pump up to 50B)	2		
	PFS990	SP-Fuses 2.5A for 110V (Collector and Pump up to 50B)	2		
	PFT010	SP-Fuses 3.15A for 220V (Unit Control)	2		
	PFT100	SP-Fuses 6.3A for 110V (Unit Control)	2		
	PFY700	SE-Fuses 1.25A (Electric Valve)	2		
	RAA520	SP-Fuses 5A for 110V (Pump From 100B)	2		
	RAA530	SP-Fuses 2.5A for 220V (Pump From 100B)	2		
	0C3570	SE-Fuses 2.5A/250V (XS420 Detector)	2		

Recommendation: Intensive Use

Every 3 months	Every 12 months	XS420 plus	PF215	PF430	PF450	PF4125	PF4250
	x	x	x	x	x	x	x
			x	x	x	x	x
	x	x	x	x	x	x	x
x						x	x
x						x	
			x	x	x	x	x
			x	x	x	x	x
			x	x	x	x	x
			x	x	x	x	x
			x	x	x	x	x
					x	x	x
						x	x
						x	x
		x					

puriFlash® Generation 5

Recommendation: Normal Use

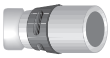
	P/N	Designation	Qty/pack	Every 6 months	Every 24 months
	1L6210	SP-20 Microns Frit Replacement	1	x	
	FO0170	SP-Adapter 1/4" 28 Male- Luer Male	1	x	
	GO2320	SP-Boucle Valco 2CC	1		x
	GV1680	SP-Micro-Mate Female Luer to 1/4"-28 Standard Thread Stainless Steel	2		x
	GV1690	SP-Tefzel Ferrule with Stainless Steel Lock Ring 1/8"	10	x	
	GV1700	SP-Short 1/8" Litetouch Male Nut Peek Natural	10	x	
	GV1710	SP-Superflangeless Male Nut 1/8" Peek Natural	10	x	
	GV1720	SP-Ferrule 1/8"	10		x
	GV1730	SE-Ecrou 1/8"	10		x
	HO2560	SP-STainless Steel Adapter for Injection	1		x
	IO6960	SP-Suction Tube 1.5m 1/8+Peek Nut+Tefzel Ferrule+Spring (x4)	1		x
	LV9840	SP-Suction Tube 1.5m 3/16+Peek Nut+Etfe Ferrule (x4)	1		
	JV5220	SP-puriFlash® Spare Parts Semi-Prep & Prep Kit-PF4100/PF4250	1		x
	NR0860	SP-Union Volume Mort 1/16" -1/16" Peek Seul	1	x	
	PFS740	SP-Fitting 1/4" 28 F- Luer Lock M Peek	1	x	

Recommendation: Intensive Use

Every 3 months	Every 12 months	XS420 plus	PF5.020	PF5.020-5X PF5.050	PF5.125 PF5.125-M PF5.125P	PF5.250 PF5.250P PF5.400	PF5.007
x			x	x	x	x	
x		x	x	x	x	x	
	x			x	x	x	
	x	x	x	x	x	x	
x		x	x	x	x	x	
x		x	x	x	x	x	
x		x	x	x	x	x	
	x				x	x	
	x				x	x	
	x				x	x	
	x		x	x	x	x	
							x
	x						
x			x	x	x	x	
x		x	x	x	x	x	

puriFlash® Generation 5

Recommendation: Normal Use

	P/N	Designation	Qty/pack	Every 6 months	Every 24 months
	**PFS920**	SP-Clapet 8mm - IIB89	1		x
	**PFS930**	SP-Clapet 10mm - IIB88	1		x
	**LO2620**	SP-Clapet 20mm - IIF90	1		x
	**PFS940**	SP-Joint Piston 8.5mm - IID36	2		x
	**LO2640**	SP-Joint Piston 14mm	2		x
	**PFS960**	SP-Detector Flow Cell 0.3mm	1		
	GO1020	SP-Detector Flow Cell 1.3mm	1		
	PFY900	SP-Detector Flow Cell 1.0mm	1		
	**PFS970**	SP-Detector Deuterium Lamp	1		x
	**LV7070**	SE-Fuses 500mA (DETECTOR)	2		
	PFS990	SP-Fuses 2.5A	2		
	PFT100	SP-Fuses 6.3A	2		
	PFY700	SE-Fuses 1.25A	2		
	RAA520	SP-Fuses 5A	2		
	PFY890	SP-Fuses 10A	2		
	**1N0240**	SE-Rotor for 10 Way Valve	1		x
	**PFY870**	SE-Rotor for Elsd Split 0.75mm	1		x

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Recommendation: Intensive Use

Every 3 months	Every 12 months	XS420 plus	PF5.020	PF5.020-5X PF5.050	PF5.125 PF5.125-M PF5.125P	PF5.250 PF5.250P PF5.400	PF5.007
	x	x	x	x			
	x	x	x	x	x	x	x
	x						x
	x	x	x	x	x	x	
	x						x
		x	x	x	x for PF5.125 & PF5.125M	x for PF5.250	
					x for PF5.125P	x for PF5.250P	
						x for PF5.400	
	x	x	x	x	x	x	x
		x	x	x	x	x	x
		x	x	x	x	x	x
						x	
			x	x			x
			x	x	x	x	x
	x				x	x	
	x		x	x	x	x	

Magic Box

These kits are made to collect a set of consumables necessary for puriFlash® systems operation:
Tubings, fittings, ferrules, keys ...

puriFlash® Generation 4

Designation	P/N
Magic box PF-XS 420	**DV2830**
Magic box PF-215	**DV2830**
Magic box PF-430	**DV2830**
Magic box PF-450	**GO1800**
Magic box PF-4125	**JO0410**
Magic box PF-4250	**LV8230**

puriFlash® Generation 5

Designation	P/N
Magic box PF-5.020 & PF-XS 520	**AXF7I0**
Magic box PF-5.020-5X	**AXF7K0**
Magic box PF-5.050	**AXF7T0**
Magic box PF-5.125	**AXF7L0**
Magic box PF-5.125 peptides	**AXF7M0**

Designation	P/N
Magic box PF-5.250	**AXF7L0**
Magic box PF-5.250 peptides	**AXF7P0**
Magic box PF-5.400	**AXF7Q0**
Magic box PF-5.020 Bio	**AXF7R0**
Magic box PF-5.007L	**AXF7S0**

Accessories

Tubings

OD	ID	Color	Max Pressure	3m	10m	25m	Picture
ETFE							
1/8''	1.59mm	Dark blue	110 bar	**IV6492**	**IV6493**	**IV6494**	
1/8''	2.4mm	Dark blue	34 bar	**IV6503**	**IV6502**	**IV6504**	
1/8''	2.4mm	Red	34 bar	- - -	**AS2W31**	- - -	
1/8''	2.4mm	Green	34 bar	- - -	**AS2W41**	- - -	
1/8''	2.4mm	Yellow	34 bar	- - -	**AS2W51**	- - -	
1/16''	0.25mm	Natural	186 bar	**168950**	**168951**	**168953**	
1/16''	1.00mm	Natural	83 bar	**958040**	**958041**	**958042**	
PEEK							
1/8''	1.59mm	Natural	220 bar	**803770**	**803771**	- - -	
Stainless steel							
1/8''	1.78mm	Natural	960 bar	**U05702**	**U05703**	- - -	

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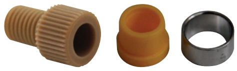
Fittings

OD tubing	Nut	Thread	Ferrule	Pkg	P/N nut	P/N ferrule	Picture
1/8”	PEEK	1/4”-28 short	SS lock ring	10u	**GV1700**	**GV1690**	
1/8”	PEEK	1/4”-28 long	SS lock ring	10u	**GV1710**	**GV1690**	
1/8”	SS	5/16”-24	SS	10u	**GV1730**	**GV1720**	
1/16”	SS	10-32	SS	10u	**1A2510**	**1A2520**	

Adapters

		Material	Pkg	P/N	Picture
1/4”-28 Male	Luer Male	ETFE	1u	**862841**	
1/4”-28 Male	Luer Lock Male	PEEK	1u	**PFS770**	
1/4” -28 Male	Luer Lock Female	ETFE	1u	**PFS780**	
1/4”-28 Male	Luer Lock Female	SS	2u	**GV1680**	
1/4”-28 Female	Luer Lock Male	PEEK	1u	**PFS740**	
1/4”-28 Female	Luer Lock Female	PEEK	1u	**U86322**	
1/4”-28 Male	1/4”-28 Male	Kel F	1u	**PFS760**	

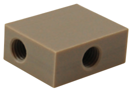
Check Valve

		Material	Pkg	P/N	Picture
1/4”-28 Female	Luer Lock Female	PEEK	1u	**PFS750**	

Unions

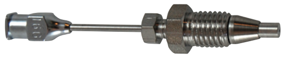
OD tubing	Thread	Material	Pkg	P/N	Picture
1/16”	10-32	PEEK	1u	**NR0860**	
1/8”	5/16"-24	SS	1u	**YM6240**	

Tee

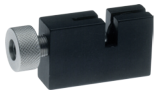
OD tubing	Thread	Material	Pkg	P/N	Picture
1/8”	1/4”-28	PEEK	1u	**PFS710**	

Back to SUMMARY

Accessories

Designation	Pkg	P/N	Picture
Injection port	1u	**HO2560**	
Tubing clip for 1/8" and 1/16"	10u	**835910**	
Stop Cock	12u	**Q71680**	
PTFE Tape	1u	**E01901**	

Tools

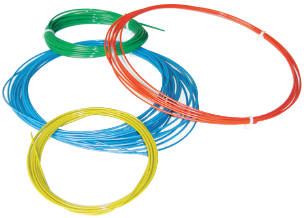
Designation	Pkg	P/N	Picture
Tubing cutter for 1/16"- 1/8"- 1/4" - 1/2"	1u	**AXGYM0**	
Stainless steel tubing cutter 1/16"	1u	**333930**	
Stainless steel tubing cutter 1/8"	1u	**1F9130**	
Wrench 1/4"-5/16"	1u	**E51011**	
Wrench 3/8"-7/16"	1u	**E51121**	
Allen Wrench kit mm	1u	**FJ7250**	
Allen Wrench kit inch	1u	**732760**	
Adjustable Spanner	1u	**AA9440**	
Screw driver box	1u	**HO8610**	

Tubings & Fittings

ETFE Tubing (EthylTrifluoroEthylene)

- Excellent solvent resistance
- Chemically inert
- More durable and less gas permeable than PTFE, FEP and PFA

OD	ID	Color	Max Pressure	3m	10m	25m
1/16" = 1.6mm	0.17mm	Natural	200 bar	**U86640**	**U86641**	**U86642**
	0.25mm	Natural	186 bar	**168950**	**168951**	**168953**
	0.50mm	Natural	152 bar	**168960**	**168961**	**168962**
	0.75mm	Natural	117 bar	**168970**	**168974**	**168975**
	1.00mm	Natural	83 bar	**958040**	**958041**	**958042**
1/8" = 3.2mm	1.59mm	Natural	110 bar	**U86650**	**U86651**	**U86652**
		Dark Blue	110 bar	**IV6492**	**IV6493**	**IV6494**
	2.4mm	Natural	34 bar	**GM7140 (1.5m)**	**GM7141 (15m)**	**GM7142 (30m)**
		Dark Blue	34 bar	**IV6503**	**IV6502**	**IV6504**



PTFE Tubing (PolyTetraFluoroEthylene)

- Chemically inert
- Ideal for low pressure applications
- Flexible

OD	ID	Color	Max Pressure	3m	10m	25m
1/16" = 1.6mm	0.18mm	Natural	62 bar	**U89500**	**U89502**	**U89503**
	0.25mm	Natural	55 bar	**182490**	**182492**	**182493**
	0.25mm	Blue	55 bar	**U88510**	**U88511**	**U88512**
	0.25mm	Black	55 bar	**U89520**	**U89521**	**U89522**
	0.50mm	Natural	50 bar	**182484**	**182485**	**182488**
	0.50mm	Orange	50 bar	**U88610**	**U88611**	**U88612**
	0.50mm	Black	50 bar	**U89540**	**U89541**	**U89542**
	0.75mm	Natural	37 bar	**186780**	**186788**	**186789**
	0.75mm	Green	37 bar	**U88520**	**U88521**	**U88522**
	1.00mm	Natural	25 bar	**178000**	**178003**	**178001**
1/8"= 3.2mm	1.59mm	Natural	35 bar	**189500**	**189504**	**189502**
	2.40mm	Natural	18 bar	**177990**	**177991**	**177992**
2mm	1.70mm	Natural	10 bar	**847150**	**847152**	**847153**
2.3mm	1.70mm	Natural	10 bar	**HP6020**		
4mm	3.00mm	Natural	17 bar	**U88531**	**U88533**	
3/16" = 4.76mm	3.76mm	Natural	14 bar	**898480***		
1/4"= 6.35mm	4.75mm	Natural	17 bar	**732260***		

Others lengths available on request.
*delivered by meter.

FEP Tubing (Fluorinated Ethylene Propylene)

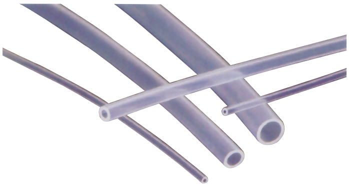
- Great alternative to traditional PTFE
- More translucent and less permeable than PTFE
- Chemically inert

OD	ID	Color	Max Pressure	1m	3m	10m	25m
1/16" = 1.6mm	0.13mm	Natural	124 bar		YE3360	YE3361	YE3362
		Red			YE3370	YE3371	YE3372
	0.15mm	Natural	117 bar		YE3430	YE3431	YE3432
		Purple			YE3440	YE3441	YE3442
	0.18mm	Natural	117 bar		YE3490	YE3491	YE3492
		Yellow			YE3510	YE3511	YE3512
	0.20mm	Natural	117 bar		YE3540	YE3541	YE3542
1/16" = 1.6mm	0.25mm	Natural	117 bar		U89550	U89551	U89552
		Blue			YE3720	YE3721	YE3722
	0.50mm	Natural	96 bar		U89470	U89471	U89472
		Orange			YE3730	YE3731	YE3732
	0.75mm	Natural	76 bar		U89480	U89481	U89482
		Green			YE3740	YE3741	YE3742
	1.00mm	Natural	52 bar		U89510	U89511	U89512
		Black			YE3750	YE3751	YE3752
1/8" = 3.2mm	1.59mm		69 bar		U89490	U89491	U89492
	2.10mm		41 bar		YE4010	YE4011	YE4012
3/16" = 4.76mm	3.18mm		41 bar		YE4210	YE4211	YE4212
1/4" = 6.35mm	4.32mm		45 bar	U89530			
1mm	0.50mm		62 bar		YE3670	YE3671	YE3672
2mm	1.00mm		62 bar		YE3700	YE3701	YE3702
3mm	1.00mm		82 bar		YE3930	YE3931	YE3932
	2.00mm		41 bar		YE4131	YE4132	YE4133

Others lengths available on request.

Technical Tip:

Tolerences	OD	ID
1/16"	± 0.05mm	± 0.05mm
1/8"	± 0.10mm	± 0.10mm
3/16"	± 0.10mm	± 0.10mm
1/4"	± 0.10mm	± 0.10mm



PFA Tubing (Perfluoroalkoxy)

OD	ID	Color	Max Pressure	1m	3m	10m	25m
1/16" = 1.6mm	0.50mm	Natural	100 bar		**984540**	**984544**	**984545**
	0.75mm	Natural	76 bar		**U88500**	**U88501**	**U88502**
	1.00mm	Natural	55 bar		**BG2940**	**BG2941**	**BG2942**
1/8" = 3.2mmm	1.59mm	Natural	72 bar		**984970**	**984971**	**984972**
	1.70mm	Natural	65 bar	**YE3710**			
3/16" = 4.76mm	3.20mm	Natural	41 bar	**YE4220**			
1/4" = 6.35mm	4.80mm	Natural	45 bar	**YE4320**			

Others lengths available on request.

Polyamide Tubing (Nylon)

- Great for gas applications
- High pressure resistance (up to 69 bar)

Color	1/8" OD - 1.6mm ID	1/4" OD - 4.30mm ID
Red	**875571**	**327712**
Yellow	**922721**	**AA0290**
Blue	**887371**	**AA0270**
Green	**922701**	**S30490**
Black	**965811**	**859500**
White	**841351**	**279550**

Technical Tip:
Gas colour code
- Flammable: Hydrogen
- Oxidant
- Nitrogen
- Oxygen, air

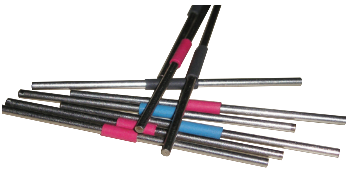
Stainless Steel Tubing

- Stainless steel type 316
- Smooth internal surface
- High quality
- Available in ring or precut length

		Standard +/- 0.05mm		Premium +/- 0.025mm	
OD	ID	3m	10m	3m	10m
1/16"	0.13mm	**383952**	**383954**	**383956**	**383957**
	0.18mm	**383943**	**383944**	- - -	- - -
	0.25mm	**177873**	**177874**	**17787A**	**17787B**
	0.38mm	- - -	- - -	**AJ8471**	**AJ8472**
	0.50mm	**186243**	**186249**	**186247**	**186248**
	0.75mm	**177893**	**177899**	**177896**	**177897**
	1.00mm	**217433**	**217434**	**21743A**	**21743B**

		Standard +/- 0.05mm		Premium +/- 0.025mm	
OD	ID	3m	10m	3m	10m
1/8"	0.75mm	---	---	170142	170143
	1.00mm	---	---	AA2631	AA2632
	1.52mm	---	---	I52511	I52512
	1.78mm	---	---	U05702	U05703
	2.10mm	177923	177926	---	---
	2.16mm	---	---	17792C	17792D
	1.00mm	217433	217434	21743A	21743B
1/4"	4.65mm	177943 (1m)	---	170142	170143

Others lengths available on request.



Technical Tip:

Which tube diameter should be used in function of the flow and the internal diameter of the column?

OD (mm)	Flow (mL/min)	ID (mm)
1 to 2.1	0.05 à 0.2	<0.13
2.1 to 3	0.2 à 0.5	0.13 to 0.17
3 to 4.6	0.5 à 1	0.17 to 0.25
4.6 to 10	1 à 10	0.25
10 to 21.1	10 à 25	0.25 to 0.50
50	50 à 100	0.50 to 1.00

Stainless Steel Precut Tubing

OD	ID	5cm	10cm	20cm	30cm	50cm	100cm
1/16"	0.18mm (Yellow)	U90180	559811	559821	U90190	---	---
	0.25mm (Blue)	292071	292081	560761	U90200	---	
	0.50mm (Orange)	U90210	390191	U90220	U90230	---	---
	0.75mm (Green)	U90240	U90250	U90260	U90270	---	---
	1.00mm	518770*	GD7790*	520290*	853680*	GD8510*	483890*
	1.17mm	AD9920	AE5990	AC9350	AC9070	AB7140	AB5660

Others lengths available on request.

OD	ID	15cm	25cm	1m	3m
1/8"	2mm	AB7200	AD8970	AD9110	AD9230

*sold by 2 units.

Copper Tubing

OD	ID	Length	P/N
1/8"	1.6mm	15m	E21471

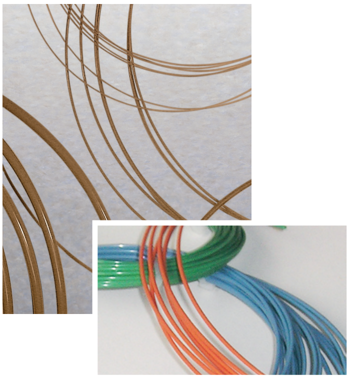
Hastelloy C Tubing

- Nickel, Chromium, Molydenum alloy
- Very high corrosion resistance (acid, strong oxidant…)
- Great for all applications where stainless steel can't be used

OD	ID	Length	P/N
1/16"	0.76mm	1m	U52130
1/8"	1.78mm	1m	320500

PEEK Tubing (PolyEtherEtherKetone)

- Polymeric and biocompatible
- Maximum recommended working temp : 100°C
- Great alternative to SS tubing in high pressure applications
- Colour code for easy identification of the ID
- Can't be used with dichloromethane, THF, DMSO and concentrated nitric and sulfuric acid



Striped color-coded PEEK Tubing

OD	ID	Color	3m	10m	25m	Max Pression
1/16"	0.18mm	Yellow	**767110**	**767111**	**767115**	**440 bar**
	0.25mm	Blue	**767120**	**767121**	**767123**	**420 bar**
	0.50mm	Orange	**767130**	**767131**	**767138**	**345 bar**
	0.75mm	Green	**767140**	**767143**	**767147**	**262 bar**
	1.00mm	Grey	**676810**	**676811**	**676814**	**179 bar**
	1.40mm	Black	**382690**	**382691**	**382691**	**55 bar**

Other dimensions on request.

Technical Tip:

ID VS volume

ID (mm)	Volume (µl/cm)
0,17	0,23
0,2	0,32
0,25	0,49
0,5	1,96
0,75	4,42
1	7,85
1,59	19,86

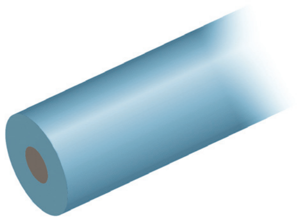
Technical Tip:

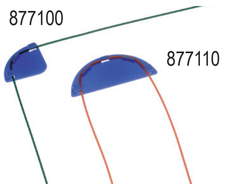
Tolerences	OD	ID
1/16"	± 0.05mm	± 0.05mm
1/8"	± 0.10mm	± 0.10mm
3/16"	± 0.10mm	± 0.10mm
1/4"	± 0.10mm	± 0.10mm

Solid color-coded PEEK Tubing

OD	ID	Color	3m	10m	25m	Max Pression
1/16"	0.18mm	Yellow	**969440**	**969442**	**IO0150**	**440 bar**
	0.25mm	Blue	**969450**	**969451**	**969452**	**420 bar**
	0.38mm	Grey	**LV0140**	**LV0141**	**LV0142**	**269 bar**
	0.50mm	Orange	**969460**	**969463**	**969465**	**269 bar**
	0.75mm	Green	**969470**	**969471**	**969473**	**262 bar**
1/8"	0.75mm	Natural	**676940**	**676941**		**379 bar**
	1.59mm	Natural	**803770**	**803771**		**248 bar**
	2.00mm	Natural	**676950**	**676951**		**179 bar**
1/4"	3.17mm	Natural	**676960***			**227 bar**

*Sold by meter. Other dimensions on request.




877100
877110

PEEK Tubing Elbows

Tubing elbows (90° and 180°) are ideal for routine 1/16'' PEEK tubing through an LC system. These elbows are proportioned to bend PEEK tubing at the optimum radius for maximum chemical resistance and burst pressure.

Installation is simple : just snap the tubing into the elbow.

Designation	P/N	Qty
Elbows 90°	**877101**	5u
Elbows 180°	**877112**	5u

Tubing Clip

Maintain a polymeric tubing on a 4mm max thickness wall.

Designation	P/N	Qty
Tubing clips for 1/16" or 1/8" OD	**835910**	10 u

Tubing cutter

AK2960

Metallic Tubing Cutter

Tube Cut off Machine

For 1/8'' and 1/16 '' OD tubing.

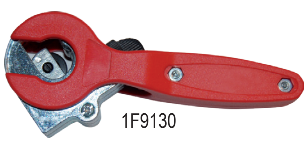
Designation	P/N	Qty
Cutter machine 220V	**AK2960**	1u
Cutting wheel replacement	**100124**	3u
1/16"dressing tool	**100116**	1u
1/8" dressing tool	**100108**	1u


745830

SS Tubing Cutter - Plier Type

- For easy cutting of 1/16'' tubing off a coil
- Reach "hard to get" places in an LC system

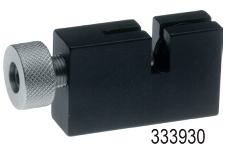
Designation	P/N	Qty
SS tubing cutter - plier type	**745830**	1u


1F9130

Metallic Tubing Cutter - Cutting Wheel Type

- For SS, copper, nickel…
- From 1/8'' to 1/2'' OD

Designation	P/N	Qty
Tubing cutter	**1F9130**	1u


333930

SS Tubing Cutter - Cutting Wheel Type

- From 1/16'' to 1/8'' OD

Designation	P/N	Qty
SS tubing cutter	**333930**	1u
Replacement wheel	**097746**	1u

Polymeric Tubing Cutter

Tubing Cutter

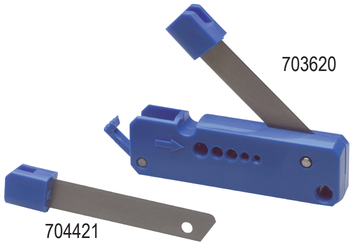
- More presicion with this tubing cutter. The tubing is led to make a perfect cut at 90°.
- For 1/16", 1/8", 1/4" & 1/2" OD tubing

Designation	P/N	Qty
Tubing cutter	**AXGYM0**	1u

Clean Cut Tubing

- For PEEK, PTFE, ETFE and other polymeric tubing
- No distortion to OD or ID

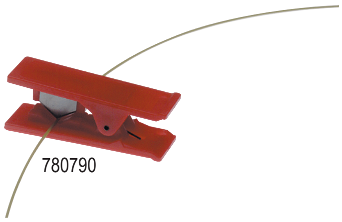
Designation	P/N	Qty
Clean cut	**703620**	1u
Replacement Blade	**704421**	1u

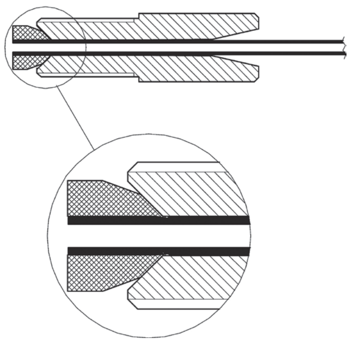


Guillotine Tubing Cutter

- Cuts PEEK, PTFE, ETFE and other polymeric tubing
- Ideal for less demanding LC applications

Designation	P/N	Qty
Guillotine cutter	**780790**	1u
Replacement Blade	**780800**	1u





Low Pressure Fittings & Adapters

Fingertight Nuts - Flangeless

The flangeless nuts in combination with the inverted ferrule do not require a flanging tool. A hand-tightening procedure makes leak-free seals. With this fitting system, the inert ETFE ferrule is the only part beside the tubing wich comes into contact with the fluid stream - the nut is never in contact.

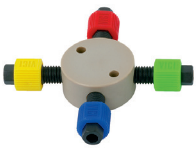
- Compatible with all 1/4"-28 flat-bottom ports
- For 1/16" or 1/8" OD tubing
- True fingertight - no tools required

245552

245532

D30160 163840

Designation	1/16"	1/8"	Qty
Polyacetal nut (white)	**177810**	**245490**	10u
Polyacetal nut (black)	**245480**	**245540**	10u
Polyacetal nut (blue)	**231532**	**245552**	10u
Polyacetal nut (green)	**187202**	**245510**	10u
Polyacetal nut (yellow)	**245472**	**245532**	10u
Polyacetal nut (red)	**231522**	**245523**	10u
PEEK nut (natural)	**167150**	**921390**	10u
PPS nut (black) hex head	**D18570**	**D30160**	10u
ETFE ferrule	**163800**	**163840**	10u
Accessories			
PEEK Cross	**U89140**	**U89150**	1u
PEEK Tee	**U89120**	**U89130**	1u
PEEK mixing Tee	**GC4300**	**GC4320**	1u
Manifold 5 ports	**LO1890**	**954030**	1u
Manifold 9 ports	**GC2820** (bore 0.75mm)	**954040** (bore 1.50mm)	1u
Union (polyamide) without nut	**187210**		5u
Union (polyamide) with nuts	**778881**	**779081**	1u
PEEK plug	**526730**		5u



187210

Fingertight Nuts - Super Flangeless & Flangeless

The super flangeless fittings provide the highest pressure holding capability in a flat-bottom fitting system on the market. The unique design eliminates loosening of fittings due to tubing twist and holds tight even through vibration.

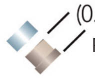
- Double ferrule system
- Compatible with all 1/4”-28 flat-bottom ports
- For 1/16” or 1/8” OD tubing
- True fingertight - no tools required

Super Flangedless	1/16"	1/8"	Qty
Long Nut PEEK 1/4" - 28	**P-255**	**P-331**	1u
Long Nut Delrin 1/4" - 28	**P-252**	**P-332**	10u
Long Nut PPS 1/4" - 28	**P-281**	**P-381**	1u
Short Nut PEEK 1/4" - 28	**LT-115X**	**LT-215X**	10u
Ferrule ETFE (max pressure 93bar for 1/16” - 69bar for 1/8”)	**P-259X**	**P-359X**	10u
Ferrule PEEK (max pressure 172bar for 1/16” - 102bar for 1/8”)	**P-250X**	**P-360X**	10u
Superflangless fitting one piece PEEK nut & ferrule	**P-249**	**P-349**	1u

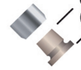
Other threads, material and size available on request

Flangeless	1/16"	1/8"	Qty
Long Nut PEEK 1/4" - 28	**P-230X**	**P-330X**	10u
Long Nut PP 1/4" - 28	**P-220X**		10u
Long Nut PFA 1/4" - 28		**P-345X**	10u
Short Nut PEEK 1/4" - 28	**P-235X**	**P-335X**	10u
Short Nut Nylon 1/4" - 28	**P-208X**		10u
Ferrule ETFE (blue 1/16” - yellow 1/8”)	**P-200X**	**P-300X**	10u
Ferrule ETFE natural (max pressure 138bar for 1/16” - 34bar for 1/8”)	**P-200NX**	**P-300NX**	10u
Tee ETFE	**P-632**	**P-633**	1u
Cross ETFE (with fittings)	**P-634***	**P-635****	1u
Y PEEK (with fittings)	**P-512***	**P-513*****	1u
Union ETFE (w/o fitting)		**P-623**	1u
Adapter 1/4"-28 to M6 ETFE (w/o fitting)		**P-621**	1u
Plug Nylon (black)		**P-309X**	10u
Plug 1/4" - 28 ETFE (natural)		**P-311**	1u
Plug 1/4" - 28 PTFE (natural)		**P-316**	1u

** bore 1.25mm
***bore 1.00mm



P-350



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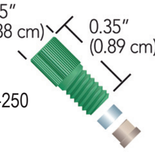
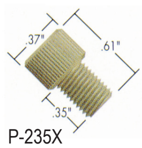


P-250


P-329



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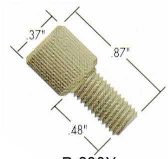
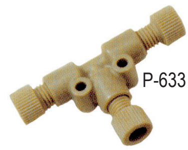


P-230X


P-200X


P-373X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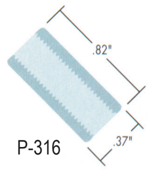

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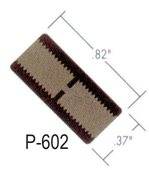


P-602

interchim


AA2800


AB7390

Barbed Adapters

Adpater in PP ideal to connect flexible tubings.

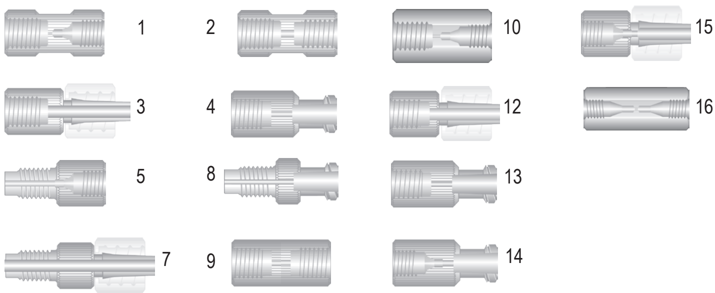
Thread /Soft Tubing ID	1/16" = 1.6mm	1/8" = 3.02mm
10-32 male	**AB7390**	**U12710**
1/4"-28 male	**AA2800**	**738940**
Luer Female	**AE2390**	
Luer Male	**AE4850**	**AE6620**
Luer Lock Male	**AD7710**	**AE2430**

Available in PEEK on request

PEEK Adapters

side1		1/4"-28	M6	Luer	Luer	10-32
side2		**female**	**female**	**female**	**male**	**female**
1/4"-28	Female	**778880** 9	**654811** 2	**U86322** 4	**U86330** 3	**737660** 1
1/4"-28	Male			**871233** 8	**GC4420** 7	**U86240** 5
M6	Female			**D51781** 13	**D51771** 12	**654754** 10
Luer	Female					**962551** 14
Luer	Male					**239681** 15
10-32	Female					**869290** 16

Delivered w/o fitting



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High Pressure Fittings & Adapters

Stainless Steel Fittings

Valco

		Male Nut	Qty	Femelle Nut	Qty
1/16"	standard (10.9mm)	**ZN1-10**	10u	**EN1**	1u
	Moyen (12.7mm)	**MZN1-10**	10u		
	Long (19.0mm)	**LZN1-10**	10u		
	Extra long (25.4mm)	**XLZN1-10**	10u		
1/8"	Standard (14.5mm)	**ZN2-10**	10u	**EN2**	1u
	Long (20.8mm)	**LZN2-10**	10u		
	Extra long (27.2mm)	**XLZN2-10**	10u		
1/4"	Standard (17.8mm)	**ZN4-10**	10u	**EN4**	1u
	Long (28.2mm)	**LZN4-10**			
3/8"				**EN6**	1u
1/2"				**EN8**	1u
1"				**EN1K**	1u

Column Coupler 10-32

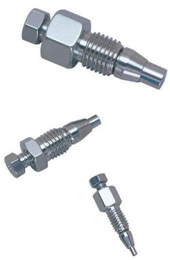
2 pieces coupler in SS
Minimal ID and length

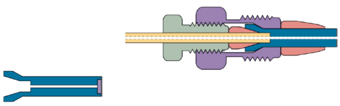
ID	Straight	Bent (U)	Qty
0.17mm	**DT2780**	**KV6570**	1u
0.25mm	**DT2790**		1u
0.50mm	**DT2800**		1u

Stainless Steel Ferrules

Designation	Inox 303	Inox 316	Qté
Stainless steel 1/16"	**ZF1-10**	**ZF1S6-10**	10 u
Stainless steel 1/8"	**ZF2-10**	**ZF2S6-10**	10 u
Stainless steel 1/4"		**ZF4S6-10**	10 u

303 type: for GC application and gas line. **316 type:** for HPLC applications.
* Other material available on request.





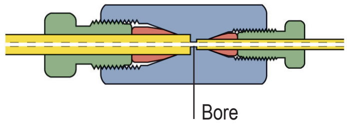
Reducing Fittings

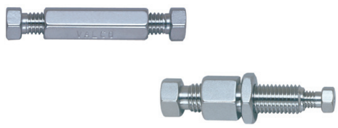
	Bore	1/16"		1/8"		1/4"	
Frits 2 µm		w/o	with	w/o	w/o	w/o	with
1/16"	0.25mm			**IZR21C**	**IZR21CF**		
	0.50mm			**IZR21**	**IZR21F**		
	1mm			**IZR21L**	**IZR21LF**	**IZR41**	**IZR41F**
	1/16"			**IZR21T**			
1/8"	1mm					**IZR42**	**IZR42F**
	2mm					**IZR42L**	**IZR42LF**

Other dimensions on request.

Reducing Unions

	Bore	1/32"	1/16"	1/8"	1/4"
1/16"	0.15mm		**ZU1XC**		
	0.25mm		**ZU1C**	**ZRU21C**	**ZRU41C**
	0.50mm		**ZU1M**		
	0.75mm		**ZU1**	**ZRU21**	**ZRU41**
	1mm		**ZU1L**		
	1/16"		**ZU1T**	**ZRU21T**	**ZRU41T**
1/8"	0.75mm			**ZU2**	
	1mm				**ZRU42**
	2mm			**ZU2L**	**ZRU42L**
	1/8"			**ZU2T**	**ZRU42T**
1/4"	0.75mm				**ZU4**
	4.6mm				**ZU4L**
	1/4"				**ZU4T**



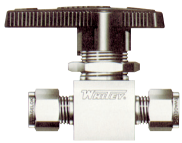


Bulkhead version available on request.

Tee & Cross

	Bore	Tee	Cross
1/16"	0.25mm	**ZT1C**	**ZX1C**
	0.50mm	**ZT1M**	**ZX1M**
	0.75mm	**ZT1**	**ZX1**
	1.00mm	**ZT1L**	**ZX1L**
1/8"	0.75mm	**ZT2**	**ZX2**
	2.0mm	**ZT2L**	**ZX2L**
1/4"	1.00mm	**ZT4**	**ZX2**
	4.60mm	**ZT4L**	**ZX4L**

Other dimensions on request.



2 way

Ball Valves - On-Off (2 way) Valves

40 serie valves:
Max pressure 206bar / 3000psi
Temperature range: 10 to 65°C
Brass body

40G serie valves:
Max pressure 206bar / 3000psi
Temperature range: -53 to 148°C
Stainless steel body

		40 serie - Brass			40G serie - Stainless steel	
		Straight	Angle		Straight	Angle
On-Off (2 way) Valves	1/16"	B-41S1	B-41S1-A	1/16"	SS-41GS1	SS-41GS1-A
On-Off (2 way) Valves	1/8"	B-41S2	B-41S2-A	1/8"	SS-41GS2	SS-41GS2-A
On-Off (2 way) Valves	1/4"	B-42S4	B-42S4-A	1/4"	SS-42GS4	SS-42GS4-A
On-Off (2 way) Valves	3/8"	B-43S6	B-43S6-A	3/8"	SS-43GS6	SS-43GS6-A

3, 5 and 7 ways valves available on request.

Metric Needle Valves

	SS straight	SS angle	Brass straight	Brass angle
1/16"		SS-SS1-A		B-SS1-A
1/8"	SS-SS2	SS-SS2-A	B-SS2	B-SS2-A
1/4"	SS-SS4	SS-SS4-A	B-SS4	B-SS4-A

Can't be used as on-off valves.

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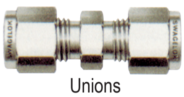
Swagelok Fittings

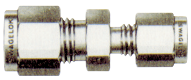
	SS		Brass		PTFE	
Nut						
1/16"	SS-102-1	**163090**	B-102-1	**097830**	T-102-1	**BV3370**
1/8"	SS-202-1	**163100**	B-202-1	**097840**	T-202-1	**519720**
1/4"	SS-402-1	**163110**	B-402-1	**097850**	T-402-1	**531330**
3/8"	SS-602-1	**163120**	B-602-1	**097860**		
Front ferrule						
1/16"	SS-103-1	**163130**	B-103-1	**097871**	T-103-1	**163540**
1/8"	SS-203-1	**163140**	B-203-1	**097882**	T-203-1	**163550**
1/4"	SS-403-1	**163151**	B-403-1	**097891**	T-403-1	**163560**
3/8"	SS-603-1	**341890**	B-603-1	**954300**		
Back ferrule						
1/16"	SS-104-1	**163160**	B-104-1	**097902**	T-104-1	**163570**
1/8"	SS-204-1	**163170**	B-204-1	**097912**	T-204-1	**163580**
1/4"	SS-404-1	**163181**	B-404-1	**097921**	T-404-1	**163590**
3/8"	SS-604-1	**758100**	B-604-1	**954310**		
Ferrules kit: front & back (10 of each)						
1/16"	SS-100-SET	**BE0440**	B-100-SET	**BV3320**	T-100-SET	**BV3350**
1/8"	SS-200-SET	**U60660**	B-200-SET	**BN8810**	T-200-SET	**T07680**
1/4"	SS-400-SET	**BV3310**	B-400-SET	**BV3330**	T-400-SET	**BA7570**
3/8"	SS-600-SET	**095310**	B-600-SET	**BV3340**	T-600-SET	**BV3360**
Unions						
1/16"	SS-100-6	**163380**	B-100-6	**162930**		
1/8"	SS-200-6	**163390**	B-200-6	**162940**	T-200-6	**487700**
1/4"	SS-400-6	**163400**	B-400-6	**162950**	T-400-6	**170380**
3/8"	SS-600-6	**163410**	B-600-6	**162960**		
Reducing unions						
1/8" - 1/16"	SS-200-6-1	**163430**	B-200-6-1	**162980**	T-200-6-1	**750430**
3/16" - 1/8"	SS-300-6-2	**163440**	B-300-6-2	**162990**	T-300-6-2	
1/4" - 1/16"	SS-400-6-1	**163450**	B-400-6-1	**163000**	T-400-6-1	
1/4" - 1/8"	SS-400-6-2	**163460**	B-400-6-2	**163010**	T-400-6-2	**360880**
3/8" - 1/4"	SS-600-6-4	**163470**	B-600-6-4	**163020**	T-600-6-4	
Plugs						
1/16"	SS-100-C	**163480**	B-100-C	**163030**		
1/8"	SS-200-C	**163490**	B-200-C	**163040**		
1/4"	SS-400-C	**163500**	B-400-C	**163050**		
3/8"	SS-600-C	**355360**	B-600-C	**750440**		
Caps						
1/16"	SS-100-P	**163510**	B-100-P	**163060**		
1/8"	SS-200-P	**163520**	B-200-P	**163070**		
1/4"	SS-400-P	**163530**	B-400-P	**163080**		
3/8"	SS-600-P	**750470**	B-600-P	**750450**		

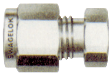

Nut


Front ferrule

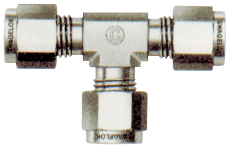

Back ferrule


Unions

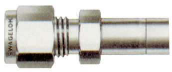

Reducing unions

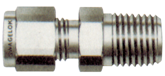

Plugs

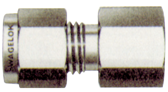

Caps


Tee


Cross


Reducer


NPT male fitting


NPT female fitting

	SS		Brass		PTFE	
Tees						
1/16"	SS-100-3	**163340**	B-100-3	**098080**	T-100-3	**879390**
1/8"	SS-200-3	**163350**	B-200-3	**098090**	T-200-3	**221360**
1/4"	SS-400-3	**163360**	B-400-3	**098100**	T-400-3	**R99560**
3/8"	SS-600-3	**163370**	B-600-3	**098110**		
Cross						
1/8"	SS-200-4	**566362**	B-200-4	**431270**		
1/4"	SS-400-4	**566373**	B-400-4	**291840**		
3/8"	SS-600-4	**AG2020**	B-600-4	**311330**		
Reducers						
1/16"x 1/8" tube	SS-100-R-2	**163290**	B-100-R-2	**098030**		
1/16" x 1/4" tube	SS-100-R-4	**852320**	B-100-R-4	**852330**		
1/8" x 1/16" tube	SS-200-R-1	**672571**	B-200-R-1	**672570**		
1/8" x 1/4" tube	SS-200-R-4	**163300**	B-200-R-4	**098040**		
3/16" x 1/4" tube	SS-300-R-4	**163310**	B-300-R-4	**098050**		
1/4" x 1/8" tube	SS-400-R-2	**163330**	B-400-R-2	**098070**		
1/4" x 3/8" tube	SS-400-R-6	**273000**	B-400-R-6	**341000**		
3/8" x 1/4" tube	SS-600-R-4	**163320**	B-600-R-4	**098060**		
NPT male connectors						
1/16" x 1/8" NPT	SS-100-1-2	**163200**	B-100-1-2	**097940**	T-100-1-2	**317770**
1/8" x 1/8" NPT	SS-200-1-2	**163210**	B-200-1-2	**097950**	T-200-1-2	**317770**
1/8" x 1/4" NPT	SS-200-1-4	**732360**	B-200-1-4	**216330**		
1/4" x 1/8" NPT	SS-400-1-2	**163220**	B-400-1-2	**097960**		
1/4" x 1/4" NPT	SS-400-1-4	**163230**	B-400-1-4	**097970**		
NPT female connectors						
1/16" x 1/8" NPT	SS-100-7-2	**390110**	B-100-7-2	**750670**		
1/8" x 1/8" NPT	SS-200-7-2	**163250**	B-200-7-2	**097990**		
1/8" x 1/4" NPT	SS-200-7-4	**758110**	B-200-7-4	**530770**		
1/4" x 1/8" NPT	SS-400-7-2	**163260**	B-400-7-2	**098000**		
1/4" x 1/4" NPT	SS-400-7-4	**163270**	B-400-7-4	**098010**		


Magic box fittings and unions brass or SS 1/8'' & 1/4''
BZ1870 (brass) or FV2630 (SS)

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PEEK Fittings

Uptisur Fittings

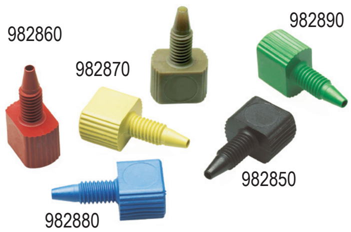
- 10-32 for 1/16" OD tubing
- Machined piece from PEEK
- High pressure resistance
- High burst resistance
- Up to 350bar

Compare to the moled fittings, the machined fittings offer a better mechanical and pressure resistance and a perfect connection after several use.

Designation	P/N	Qty
Uptisur® fitting (PEEK nut 1/16")	**468452**	10u

Standard PEEK Fittings

- 10-32 for 1/16" OD tubing
- Molded in PEEK
- Up to 350bar

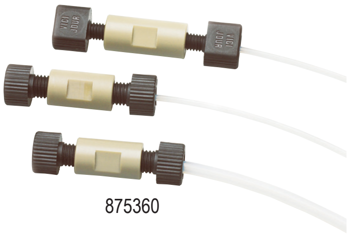


Designation	P/N	Qty
PEEK Fitting (natural)	**78077G**	10u
PEEK Fitting (black)	**982850**	5u
PEEK Fitting (red)	**982860**	5u
PEEK Fitting (yellow)	**982870**	5u
PEEK Fitting (blue)	**982880**	5u
PEEK Fitting (green)	**982890**	5u

No Twist Fittings

- PEEK fitting with clipped ferrule
- Ferrule in PEEK reinforced with glass fiber, PEEK or CTFE

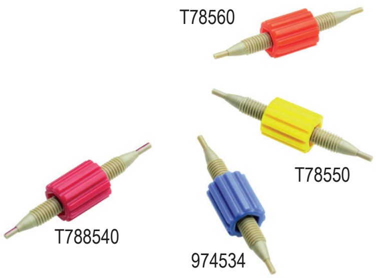
Delivered by 5 units	Reinforced PEEK ferrule	PEEK ferrule	CTFE ferrule
Short nut hex head (14mm)	**ZNF1PKG-5**	**ZNF1PK-5**	**ZNF1KF-5**
Nut hex head (16mm)	**MZNF1PKG-5**	**MZNF1PK-5**	**MZNF1KF-5**
Long nut hex head (18mm)	**LZNF1PKG-5**	**LZNF1PK-5**	**LZNF1KF-5**
Fingertight nut	**ZNF1FPKG-5**	**ZNF1FPK-5**	**ZNF1FKF-5**



PEEK Unions

- 10-32 Thread
- Connection for all material 1/16'' OD tubing
- Bore: 0.3mm

Designation	P/N	Qty
Union with fittings	**875360**	1 kit
Union whithout fitting	**869290**	1u



Column Couplers

- Connection column-column / guard column-column
- Fingertight
- Up to 350 bar
- Biocompatible (100% PEEK)

Designation	Bore	P/N	Qty
Blue	0.25mm	**974534**	1u
Red	0.13mm	**T78540**	1u
Yellow	0.17mm	**T78550**	1u
Orange	0.50mm	**T78560**	1u

PEEK Fittings, Ferrules & Plugs

- Connection without dead volume
- Up to 350bar

OD	Fitting length	P/N	Plug	Cap
Figertight				
1/16"	22.4mm	**ZN1FPK-10**	**ZP1FPK**	**ZC1FPK**
Hex head				
1/16"	11.4mm	**ZN1PK-10**		
	15.7mm	**MZN1PK-10**	**MZP1PK**	
	22.1mm	**LZN1PK-10**	**LPZP1PK**	**ZC1PK**
1/8"	15.75mm	**ZN2PK-10**	**ZP2PK**	**ZC2PK**

Other dimensions on request.

ZF

	1/32"	1/16"	1/8"	1/4"	3/8"	1/2"
Ferrules	**ZF.5PK-10**	**ZF1PK-10**	**ZF2PK-10**	**ZF4PK-10**	**ZF6PK-10**	**ZF8PK-10**

PEEK Unions & Reducing Unions

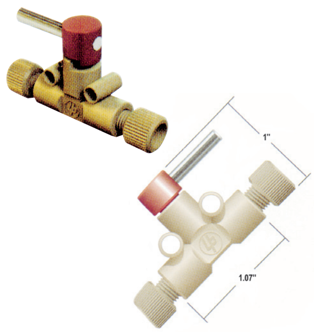
	1/32"	1/16"	1/8"	Bore
1/16"		**ZU1CFPK**		0.25mm
		ZU1MFPK	**ZRU21CFPK**	0.50mm
		ZU1FPK		0.75mm
		ZU1TFPK	**ZRU21FPK**	1/16"
		ZU1CPK (hex)	**ZRU21LFPK**	0.25mm
		ZU1MPK (hex)		0.50mm
		ZU1PK (hex)	**ZRU21TFPK**	0.75mm
		ZU1TPK (hex)		1/16"
1/8"			**ZU2PK**	0.75mm
			ZU2LPK	2mm
			ZU2TPK	1/8"

Other dimensions on request.

PEEK Tee & Cross

	Bore	Tee	Cross
1/16"	0.25mm	**ZT1CFPK**	**ZX1CFPK**
	0.50mm	**ZT1MFPK**	**ZX1MFPK**
	0.75mm	**ZT1FPK**	**ZX1FPK**
	1.00mm	**ZT1LFPK**	**ZX1LFPK**
1/8"	0.75mm	**ZT2PK**	**ZX2PK**
	2.00mm	**ZT2LPK**	**ZX2LPK**

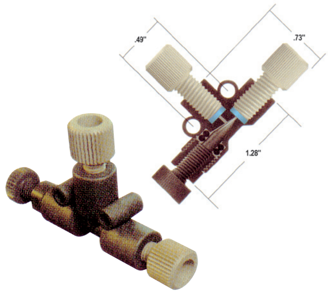
Other dimensions on request.



Shut-Off Valve

- Biocompatible
- Delivered with fitting for 1/8" and 1/16" OD tubing
- 1/4"-28 Thread
- Body : PEEK or ETFE
- Rotor : Kel-F
- Up to 35bar

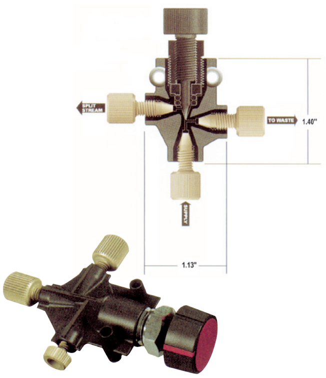
Designation	1/16" Bore 0.5mm	1/8" Bore 1.0mm
PEEK Valve (35bar max.)	**P-732**	**P-733**
ETFE Valve (35bar max.)	**P-782**	**P-783**



Micro-Metric Valve

- Biocompatible PEEK
- Delivered with fitting 1/16" OD tubing
- 1/4"-28 Thread
- Minimum flowrate 3.5µl/min
- Up to 55bar

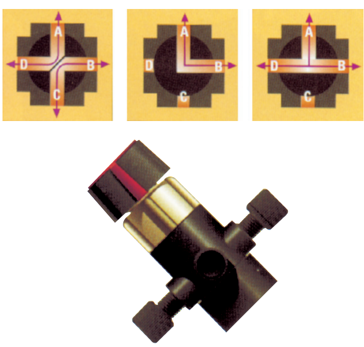
Designation	1/16"	1/8"
Vanne micro-métrique	**P-445**	**P-447**



Micro-Splitter Valve

- Biocompatible PEEK
- Delivered with fitting 1/16" OD tubing
- 1/4"-28 or 10-32 Thread
- Minimum flowrate 2µl/min
- Up to 55bar

Designation	P/N
Micro-splitter valve 1/4"-28	**P-450**
Micro-splitter valve 10-32	**P-451**



Selection Valve

- Biocompatible PEEK
- Delivered with fitting 1/16" OD tubing
- 1/4"-28 Thread
- Up to 34bar

Designation	P/N
Double diagonale valve	**V-100D**
Right angle L valve	**V-100L**
Single T valve	**V-100T**

Bulkhead version available.

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In line filter

Semi-Prep in Line Filters

- Designed for high flow applications
- Economical protection for larger columns

Designation	P/N	Qty
In line filter 21.2mm	**CE4600**	1u
Replacement frit	**CE4620**	1u

Syringes & needles

Plastic Syringes

- Sterile 3 pieces
- Polypropylene translucend
- Luer or luer lock connection

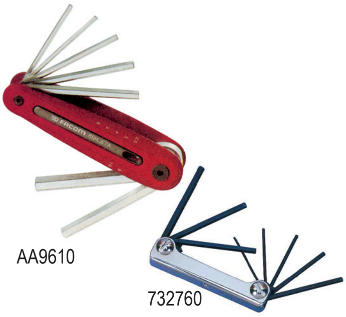
Plastic syringes 3 pieces	Luer	Qty	Luer Lock	Qty
1mL	**AN0660**	100u		
2mL	**839820**	100u		
5mL	**910160**	100u	**DT2550**	100u
10mL	**U50760**	100u	**DT2560**	120u
20mL	**491970**	50u	**R48210**	60u
30mL	**U75440**	50u	**I05990**	60u
50mL	**U75450**	25u	**AA8170**	25u
100mL			**OO2390**	25u

Luer Needle

- Metal needle
- Kel-F luer port
- Style 2 or 3

		Length 100mm	Length 150mm	Length 20mm	Qty
Style 2		**AS2I30**	**AS2I20**	**AS2I10**	6u
Style 3		**AS2I60**	**AS2I50**	**AS2I40**	6u

Tools



AA9610

732760

Allen Wrench Set

Dimensions	P/N
mm (2,5-3-4-5-6-8-10)	**AA9610**
Inch (1/16-5/64-3/32-1/8-5/32-3/16-1/4)	**AA9611**
Inch 0,05"-1/16"-5/64"-3/32"-7/64"-1/8"-9/64"-5/32"	**732760***

* for Valco valves.

AA9370

FJ7250

Allen Wrench

A (mm)	B x L (mm)	P/N	A (Inch)	B x L (mm)	P/N
2	16 x 75	**AA9320**	1/16	16 x 62	**AA9370**
3	20 x 90	**L62651**	1/8	20 x 90	**AA9380**
4	25 x 100	**M10701**	9/64	22 x 95	**M10721**
5	28 x 115	**AA9330**	3/16	28 x 115	**AA9390**
6	32 x 135	**AA9340**	1/4	32 x 140	**AA9400**
8	36 x 150	**AA9350**	5/16	36 x 150	**AA9410**
10	40 x 170	**AA9360**	3/8	38 x 170	**AA9420**
Kit 1,5 - 2 - 2,5 - 3 - 4 - 5 - 6 - 8 - 10					**FJ7250**

DV5970

Torx Wrench Set

Designation	P/N
Torx n° 8-10-15-20-25-27-30-40	**DV5970**

Open End Wrench

mm	P/N	Inch	P/N
7-8	**AA8720**	1/4-5/16	**E51011**
8-10	**AA8730**	3/8-7/16	**E51121**
10-13	**AA8740**	1/2-9/16	**311380**
13-17	**AA8750**	5/8-11/16	**BC2510**
8 keys kit *	**AA8711**	6 keys kit **	**AA8700**

* 8-9 ; 10-11 ; 12-13 ; 14-15 ; 16-17 ; 18-19 ; 21-23 ; 22-24

** 1/4-5/16 ; 3/8-7/16 ; 1/2-9/16 ; 5/8-11/16 ; 3/4-13/16 ; 7/8-15/16

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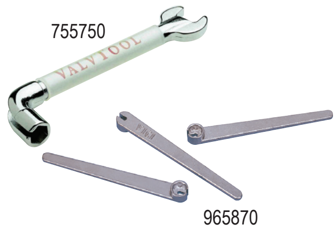
1/4" Wrench

Time saving device which provides easy access to many hard to reach areas. The unique design with its slotted wrench allows tightening of nuts where a loop or a capillary might otherwize make it difficult.

Description	P/N
1/4" hex wrench & 5/16" flat	**755750**
1/4" hex wrench	**965870**
Standard 1/4" wrench	**311360**



Ajustable Wrench

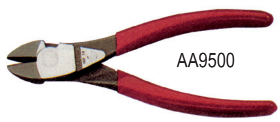
	P/N
100 x 13mm	**AA9430**
150 x 19mm	**AA9440**
205 x 24mm	**AA9450**
255 x 28mm	**AA9460**
305 x 34mm	**AA9470**

Pliers

	High performance	High performance	Standard	Mini
Handle	Ergonomic	Chromium	PVC	Comfort
size	52mm	52mm	46mm	14mm
P/N	**AA9651**	**AA9480**	**AA9490**	**GV8440**

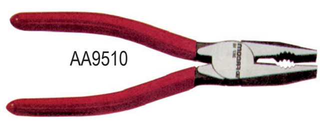
Cutting Plier

Length	P/N
14cm	AA9500



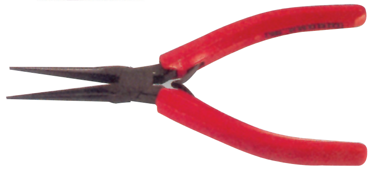
Universal Pliers

Length	P/N
165mm	AA9510



Nose Plier

	Straight	Straight	Bent
Length	150mm	200mm	200mm
P/N	**BN3570**	**BN3540**	**BN3560**



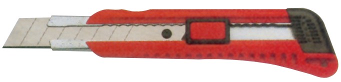
Tweezers

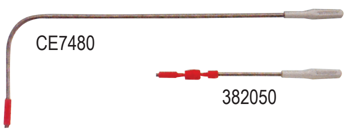
Straight	Straight	Straight	Bent 40°	Bent 45°
130mm	155mm	165mm	155mm	150mm
SS	SS	SS	SS	SS
CC6480	**E27041**	**CE7390**	**CE7400**	**CC6470**
				Plastic
				AU0640

AA3110

AA9190

DV7590

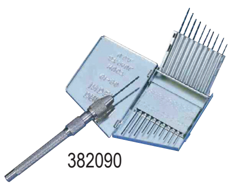




CE7480

382050

FO2510



382090

268630

FO2550

AU0610

Screwdrivers

Flat		Cruciform "Phillips"			Cruciform "Pozidriv"			Torx			
l x L (mm)	P/N	N°	D x L (mm)	P/N	N°	D x L (mm)	P/N.	N°	D x L (mm)	P/N	
3.5x100	**AA9110**	0	3x75	**AA9190**	0	3x75	**AA9300**	10	3x75	**E24381**	
4.0x150	**AA9120**	1	4.5x100	**E51071**	1	4.5x100	**E27031**	20	4x100	**E24371**	
5.5x150	**AA9130**	2	6x125	**E51081**	2	6x125	**E51101**	25	5x100	**BE8830**	
6.5x200	**AA9160**	3	8x150	**E51091**	3	8x150	**AA9310**	30	6x125	**BE8840**	

Screwdriver Magnetic Exchangeable Tips

6 tips:

flat, philips, pozidrive

Screwdriver	P/N
Magnetic screw driver	**DV7590**

Cutters

Description	Lame 9mm	Lame 18mm
Cutter	**CE7450**	**CE7470**
Blend	**GV8460**	**GV8450**

Magnet

Description	P/N
Flexible magnet (530mm - ID 7mm)	**CE7480**
Magnet pen	**382050**

Calipers

- 1/50ème - 0.02mm
- max 200mm

Designation	P/N
Caliper	**FO2510**

Pin Vise & Drill Index

Designation	P/N
20 drill from 0.34 to 1mm (0.0135" à 0.039")	**382090**

PTFE Tape

Designation	P/N
PTFE tape (12mx12mm)	**E01901**

Ferrules Removal kits

Designation	P/N
Ferrule removal 2 sizes	**268630**
Ferrule removal 1/16" - 1/8"	**FO2550**

Designation	P/N
Lime	**AU0610**

Screwdriver 120 pieces

- Pozidriv®: PZ00, PZ0, PZ1, PZ2, PZ3
- Phillips®: PH00, PH0, PH1, PH2, PH3
- Flat: 3, 4, 4.5, 5, 5.5, 6, 6.5, 7, 8mm
- Torx®: T5, T6, T7, T8, T9, T10, T15, T20, T25, T27, T30, T40, T45
- Dilled Torx®: TT8, TT10, TT15, TT20, TT25, TT27, TT30, TT35, TT40, T45
- TS10, TS15, TS20, TS25, TS27, TS30, TS40, TS45, TS50
- Square: SQ0, SQ1, SQ2, SQ3
- Allen: 1.5, 2, 2.5, 3, 4, 5, 5.5, 6, 8mm
- Drilled allen: 2, 2.5, 3, 4, 5, 6mm
- Allen: 1/16", 5/64", 3/32", 7/64", 1/8", 9/64", 5/32", 3/16", 7/32", 1/4"
- Spanner®: 4, 6, 8, 10mm
- XZN®: M5, M6, M8
- Butterfly: 1, 2, 3
- Torq-set®: 6, 8, 10
- Triwing®: 1, 2, 3, 4
- mm Socket: 4, 5, 6, 7, 8, 9, 10, 11, 12, 13mm
- " Socket: 5/32", 3/16", 7/32", 1/4", 9/32", 5/16", 11/32", 3/8", 7/16", 1/2"

Designation	P/N	Qty
Screwdriver 120 pieces	**HO8610**	1 u

Filtration

Injecting a clean sample is essential to increase the lifetime of your analytical/purification systems and columns, it can be obtained by passing through a syringe filter in order to remove particulate from the matrix. Particulate-free samples are required to avoid blocked sample needles (especially when using the puriFlash® AS1 Autosampler), connection tubings, injectors and detectors.
Interchim® has developed a comprehensive range of high quality syringe filters products in recognition of the importance of this technique and to minimise subequent errors that could potentially materialise within the analysis/purification process.
UptiDisc™ disposable syringe filters are available in 4, 13 and 25mm diameter with 0.20 and 0.45µm pore size.

A good knowledge of the sample nature is imperative to evaluate the compatibility of the filter with the solvents (hydrophobic/hydrophilic character) and avoid a possibility of non specific interactions (ex: protein binding). The following charts and selection guide will help you choosing the most appropriate filter dedicated to your application.

Filtration - Selection Guide

This chart provides general guidelines on filter characteristics and applications to assist with the choice of appropriate device and membrane.

Filtration Type	Buffer Exchange Salt removal	Virus removal	Bacteria removal	HPLC clarification	Dissolution	Prefiltration
Cut off	30 - 100KD	< 0.1µm	0.2µm	0.45µm	0.45 - 1.2µm	0.8 - 25µm

Sample Volume	0.1 - 50 ml	1 - 2 ml	2 - 10 ml	10 - 100 ml	10 - 250 ml	0.2 - 2 ml	0.05 - 0.125 ml
Filter Type	µcentrifuge filter hold up volume : < 5µl	4mm hold up volume : < 15µl	13mm hold up volume : < 30µl	25mm hold up volume : < 100µl	25mm + GF hold up volume : < 150µl	96 well plate hold up volume : < 5µl	384 well plate hold up volume : < 5µl

Membrane type	
	Cellulose ester, Regenerated Cellulose, PolyEtherSulfone, NitroCellulose, Glass Fiber, PolyPropylene, PolyEthylene, Nylon, PVDF, PTFE

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Selection guide

Regenerated Cellulose - RC:
Hydrophilic membrane that has the same properties as cellulose acetate but stable with most HPLC solvents. This membrane is used for HPLC solvents, degassing, and filtration and is compatible with aqueous samples in a pH range from 2 to 12.
With a non-specific low protein binding, this membrane is chosen for protein filtration when maximum yield of recovery is needed.

Mixing of Cellulose Esters (MEC)
Ideal hydrophilic membrane for the filtration of aqueous samples,with low solvent resistance. A Glass pre-filter membrane is used for tissue culture media filtration, biological sample filtration, as clarification and sterilization of aqueous samples.
Very low protein binding (binding < PVDF, PS), the Glass prefilter increases filtrate volume yield by 3.

Nylon & Nylon Low Extractables (LE)
Commonly used for HPLC samples filtration prior to injection, with good solvent resistance.
Having hydrophilic properties, it gives good results with aqueous samples.
Should not be used when maximum protein recovery is required.

PP - Polypropylene
High resistance, may be used with virtually all solvents, acids and bases.

PVDF - Polyvinylidene Difluoride
Hydrophobic membrane with a good solvent resistance.
Ideal for filtration of HPLC mobile phase solvents and for most of biological samples.
PVDF membrane is also considered as having the lowest protein binding.

PVDF-HLC (hydrophilic)
Hydrophilic membrane without extractables, very good compatibility with 100% aqueous samples.
Very low protein binding for the filtration of biological matrix.

PTFE - Polytetrafluoroethylene
Hydrophobic membrane chemically resistant to solvents, acids and bases.
This membrane is ideal for filtration of chromatography solvents, with no extractable due to the PTFE membrane.

PTFE-HLC (hydrophilic)
Hydrophilic membrane without extractables. Very good compatibility with aqueous and organic mixtures. High pH and temperature resistance with a low protein binding.

Glass Fiber - GMF / GF
Commonly used as a pre-filter for most of filtrations devices.
It increase by 3 times the filtration capacity.
Typically used for crude samples and used for the cleaning and purification of DNA.

Polyethersulfone (PES)
Hydrophilic membrane with very low protein and nucleic acids binding. High mechanical resistance that allow the fast filtration of high sample volume. Mainly dedicated to the filtration of cells cultures. Good compatibility with alcools and strong bases.

Nitrocellulose (NO2)
Hydrophilic membrane dedicated to clarify and to filter aqueous samples as well as MEC membranes.

Cellulose Acetate - CA
Ideal hydrophilic membrane for the filtration of aqueous samples, with low solvent resistance.
Less chemical resistance compare to RC membranes.
A Glass pre-filter membrane is used for tissue culture media filtration, biological sample filtration, as clarification and sterilization of aqueous samples.
Very low protein binding (binding < PVDF, PS), the Glass pre-filter increases filtrate volume yield by 3.

PTFE:	Polytetrafluoroethylene
PTFE-HLC:	Hydrophilic Polytetrafluoroethylene
PVDF:	Polyvinylidine difluoride
PVDF-HLC:	Hydrophobic Polyvinylidine difluoride
RC:	Regenerated Cellulose
MEC:	Mixing of cellulose esters
PES:	Polyethersulfone
NO2:	Nitrocellulose
GF:	Glass Fiber
GMF :	Glass Microfiber
Nylon :	Polyamide 6
Nylon LE:	Nylon Low Extractables
PP:	Polypropylene
PP-2:	Hydrophilic Polypropylene
PE:	Polyethylene
UH-PE:	High Density Polyethylene
CA:	Cellulose Acetate

Chemical Compatibility

C :	Compatible
LC :	Limited compatibility
NC :	Not compatible
ND :	No data available

Nylon :	Polyamide 6
PTFE :	Polytetrafluoroehylene
PVDF :	Polyvinylidine difluoride
RC :	Regenerated Cellulose
PP :	Polypropylene
GF :	Glass Fiber
CA :	Cellulose Acetate
PES :	Polyethersulfone
MEC :	Mixing of cellulose esters

	Nylon	PTFE	PVDF	RC	PP	CA	PES	MEC	GF
Acids									
Acetic, Glacial	LC	C	C	C	C	NC	C	NC	C
Acetic, 25%	C	C	C	C	C	NC	C	C	C
Hydrochloric, Concentrated	NC	C	C	NC	C	NC	C	NC	C
Hydrochloric, 25%	NC	C	C	NC	C	NC	C	NC	C
Sulfuric, Concentrated	NC	C	NC	NC	C	NC	NC	NC	C
Sulfuric, 25%	NC	C	C	LC	C	NC	C	NC	C
Nitric, Concentrated	NC	C	C	NC	C	NC	NC	NC	LC
Nitric, 25%	NC	C	C	NC	C	NC	C	NC	LC
Phosphoric, 25%	NC	C	ND	LC	C	NC	ND	C	ND
Formic, 25%	NC	C	ND	C	C	NC	ND	LC	ND
Trichloroacetic, 10%	NC	C	ND	C	C	NC	ND	C	ND
Bases									
Ammonium Hydroxide, 25%	C	C	LC	LC	C	LC	C	C	C
Sodium Hydroxide, 3 Normal	C	C	C	LC	C	NC	C	NC	ND
Alcools									
Methanol, 98%	C	C	C	C	C	LC	C	C	C
Ethanol, 98%	C	C	C	C	C	LC	C	C	C
Ethanol, 70%	LC	C	C	C	C	LC	C	LC	C
Isopropanol, n-Propanol	C	C	C	C	C	LC	C	C	C
Amyl alcohol, Butanol	C	C	C	C	C	LC	C	C	C
Benzyl Alcohol	C	C	C	C	C	LC	ND	LC	NC
Ethylene glycol	C	C	C	C	C	LC	C	C	C
Propylene glycol	C	C	C	C	C	LC	C	LC	C
Glycerol	C	C	C	C	C	LC	C	C	C
Hydrocarbons									
Hexane, Xylene	C	C	C	C	NC	LC	C	C	C
Toluene, benzene	C	C	C	C	NC	C	C	C	C
Kerosene, Gasoline	C	C	C	C	LC	LC	C	C	ND
Tetrakin, Decalin	ND	C	C	C	ND	C	C	C	ND
Halogenated Hydrocarbons									
Methylene Chloride	LC	C	C	C	LC	NC	NC	NC	C
Chloroform	C	C	C	C	LC	NC	NC	NC	C
Trichloroethylene	C	C	C	C	LC	LC	NC	C	C
Monochlorobenzene, Freon	C	C	C	C	C	LC	LC	C	C
Carbon Tetrachloride	C	C	C	C	LC	LC	NC	LC	C
Ketones									
Acetone, Cyclohexanone	C	C	C	C	C	NC	NC	NC	C
Methyl Ethyl Ketone	C	C	LC	C	LC	NC	NC	LC	C
Isopropylacetone	C	C	NC	C	ND	NC	NC	C	C
Methyl Isobutyl Ketone	ND	C	LC	C	LC	NC	NC	ND	C

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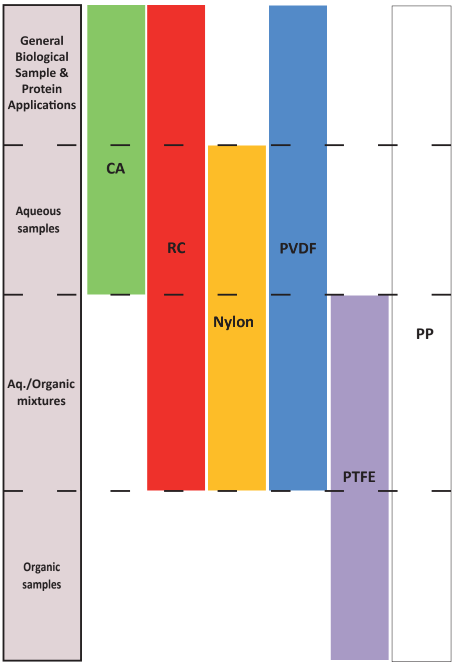
Chemical Compatibility

	Nylon	PTFE	PVDF	RC	PP	CA	PES	MEC	GF
Esters									
Ethyl Acetate, & Methyl Acetate	C	C	C	C	LC	LC	NC	NC	C
Amyl, Propyl & Butyl Acetate	C	C	ND	C	LC	LC	NC	LC	C
Propyl Acetate	C	C	NC	C	LC	LC	NC	LC	ND
Propylene Glycol Acetate	ND	C	ND	C	C	LC	NC	NC	ND
2-Ethoxyethyl Acetate	ND	C	ND	C	ND	LC	NC	LC	ND
Methyl Cellosolve Acetate	ND	C	ND	C	ND	LC	NC	LC	C
Benzyl Benzoate	C	C	ND	C	ND	LC	NC	C	ND
Isopropyl Myristate	C	C	ND	C	ND	LC	NC	C	ND
Tricresyl Phosphate	ND	C	ND	C	ND	LC	NC	C	ND
Ethers Oxydes									
Ethyl Ether	C	C	C	C	C	LC	C	C	C
Dioxane & Tetrahydrofuran	C	C	LC	C	ND	NC	NC	NC	C
Triethanolamine	C	C	LC	C	ND	LC	NC	NC	ND
Dimethylsulfoxide (DMSO)	C	C	NC	C	C	NC	NC	NC	C
Isopropyl Ether	ND	C	C	C	C	LC	C	C	ND
Nitrogen Solvents									
Dimethyl Formamide	LC	C	NC	LC	C	LC	NC	NC	C
Diethylacetamide	C	C	ND	C	ND	LC	ND	NC	C
Triethanolamine	C	C	ND	C	ND	NC	ND	C	ND
Aniline	ND	C	ND	C	ND	NC	ND	NC	ND
Pyridine	C	C	C	C	LC	NC	NC	NC	C
Acetonitrile	C	C	C	C	LC	NC	LC	NC	C
Various									
Phenol, Aqueous, 10%	ND	C	LC	NC	C	ND	NC	NC	C
Formaldehyde Solution, 30%	C	C	C	LC	C	ND	C	C	C
Hydrogen Peroxide, 30%	C	C	ND	C	ND	ND	ND	C	ND
Silicone Oil & Mineral Oil	ND	C	C	C	C	ND	C	C	C
Pyridine	C	C	C	C	LC	ND	ND	NC	C
pH Range									
1 - 14	NC	C	NC	NC	C	NC	NC	ND	C
3 - 12	C	C	NC	C	C	NC	C	ND	C
4 - 8	C	C	C	C	C	C	C	ND	C

How to choose the right filter:

1

Select the membrane



2

Select filter i.d.

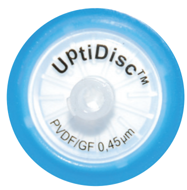
Sample < 2mL

Ø4mm

2mL < Sample < 10mL

Ø13mm

10mL < Sample < 100mL



Ø25mm

3

Select the pore size

0.20µm

Recommanded with
MS and ELSD detection

0.45µm

For routine analysis / purification

Additional 1.0µm GF prefilter

Viscous & high suspended solids

UptiDisc™ GFX Multi-Layer technology

To filter very high particulate solutions: biological, dissolution testing, environmental samples, food analysis, biofuel analysis

UptiDisc™ syringe filters 13 & 25mm

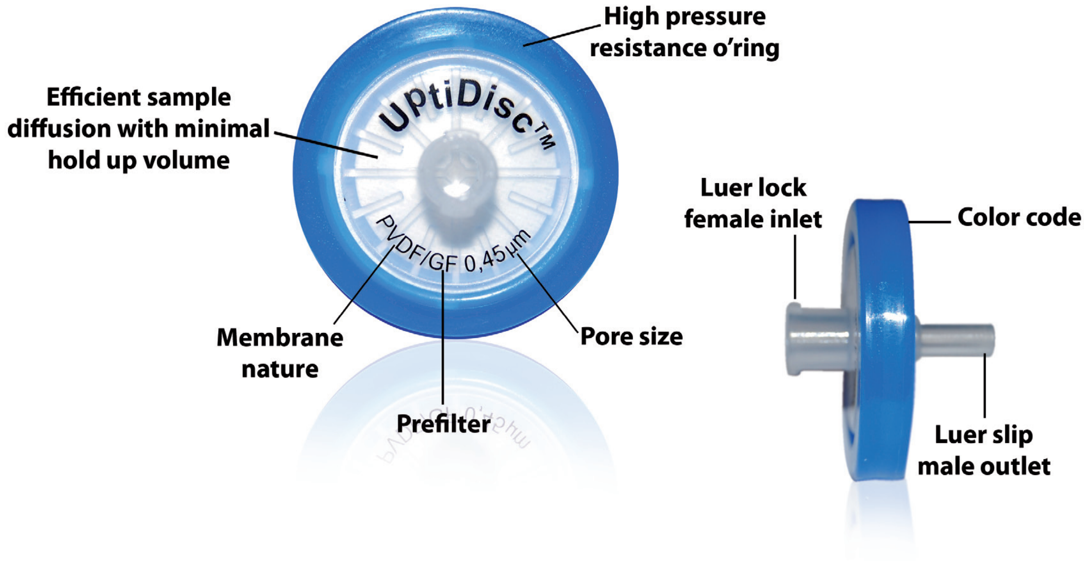
UptiDisc™, high quality level syringe filters, allow fast and efficient filtration, thanks to its optimized sample diffusion hardware.
The retention volumes have been drastically reduced, maximum operating pressures are about 7 bar for 13 and 25mm filters.
They allow safe filtration of aqueous, organic and biological samples, all 13 and 25mm filters are easily identified by their specific membrane color code.
All 25mm filters are available with 1.0µm GF prefilter to reduce the membrane clogging.

Features:

- Filter type: Non sterile
- Housing: PP
- Inlet: Female Luer lock
- Outlet: Male Luer
- Diameter: 13 - 25mm
- Pore size: 0,20 - 0,45µm
- Membranes: CA, Nylon, PP, PTFE, PTFE-HLC, PVDF, PVDF-HLC, RC
- Pack: 100 or 500 u

Technical Tip:

Syringe volume	Pressure
1mL	~10 bars
3mL	~7 bars
5mL	~5 bars
10mL	~3 bars
20mL	~2 bars



UptiDisc™ Syringe Filters 13 & 25mm

Membrane	Ø (mm)	Pore Size (µm)	Prefilter	Inlet	Outlet	Housing	Filtration Area (cm²)	Dead Volume (µl)	Max. Sample Volume (mL)	Max. Pressure (psi)	P/N	Qty
Cellulose Acetate	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**EV3820**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2,98	< 50	< 80	87	**EV3810**	100 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**EV3840**	100 u
Nylon	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54670**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	< 50	< 80	87	**N11720** **N11721**	100 u 500 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54680**	100 u
PP hydrophobic	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54690**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	< 50	< 80	87	**N11800** **N11801**	100 u 500 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54700**	100 u
PTFE 	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54710**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	< 50	< 80	87	**N11740** **N11741**	100 u 500 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54720**	100 u
PTFE-HLC	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	<100	<100	87	**1L3600**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	<50	<80	87	**1L3610** **1L3611**	100 u 500 u
	25	0.45	yes 1.0µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	<100	<100	87	**1L3620**	100 u
PVDF	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54730**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	< 50	< 80	87	**N11780** **N11781**	100 u 500 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54740**	100 u
PVDF-HLC	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	<100	<100	87	**1L3660**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	<50	<80	87	**1L3670** **1L3671**	100 u 500 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	<100	<100	87	**1L3680**	100 u
RC	25	0.20	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54650**	100 u
	25	0.45	no	Luer-Lock	Luer slip	Polypropylene	2.98	< 50	< 80	87	**T38100** **T38101**	100 u 500 u
	25	0.45	yes 1.0 µm GF	Luer-Lock	Luer slip	Polypropylene	4.08	< 100	< 100	87	**U54660**	100 u

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Uniplates™ G & GF - Silica gel 60

15µm - 60Å - glass plates by 25 units

- G & GF layers contain no organic materials
- Soft layers with gypsum binder enable easy scraping of bands from plate
- Fluorescent indicator has green fluorescent at 254nm

Scored	Channeled	Preadsorbent zone	Thickness	20x40cm	20x20cm	10x20cm	5x20cm
-	-	-	500µm	01052	01012	01022	01032
-	-	-	500µm	02052*	02012*	02022*	02032*
-	-	-	1000µm	01053	01013	01023	01033
-	-	-	1000µm	02053*	02013*	02023*	02033*
-	-	-	1500µm	01054	01014	01024	
-	-	-	1500µm	02054*	02014*	02024*	
-	-	-	2000µm	31011	01015	01025	
-	-	-	2000µm	32011*	02015*	02025*	
Yes	-	-	500µm		01512		
Yes	-	-	500µm		02512*		
-	Yes	-	500µm		01912		
-	Yes	-	500µm		02912*		
-	-	Yes	500µm		31012		
-	-	Yes	500µm		32012*		
-	-	Yes	1000µm		31013		
-	-	Yes	1000µm		32013*		
Yes	-	Yes	500µm		31512		
Yes	-	Yes	500µm		32512*		

* red with fluorescent indicator 254nm.

RPS Uniplates - Reverse Phase

15µm - 60Å - glass plates by 25 units

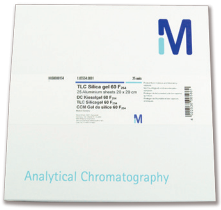
- Aqueous compatibility for polar samples
- norganic binder
- Expanded flexibility to a wide range of applications

	Scored	Thickness	10x20cm	5x20cm
	-	250µm	50011	50021
	-	250µm	52011*	52021*
	Yes	250µm	50021	50521
	Yes	250µm	52021*	52521*
PREP	-	500µm	50012	50022
	-	500µm	52012*	52022*
	Yes	500µm	50512	
	Yes	500µm	52512*	
	-	1000µm	50013	
	-	1000µm	52013*	

* red with fluorescent indicator 254nm.

TLC Classical Silica Plates

For reliable routine analysis
Available with glass, aluminium and plastic support



TLC Unmodified Silica Gel 60

Packing Material	Format [cm]	Content	Backing	P/N
Silica gel 60	20 x 20	25 plates	glass	**1.05721.0001**
	10 x 20	50 plates	glass	**1.05626.0001**
	5 x 20	100 plates	glass	**1.05724.0001**
	2.5 x 7.5	100 plates	glass	**1.15326.0001**
Silica gel 60 F_{254}	20 x 20	25 plates	glass	**1.05715.0001**
	10 x 20	50 plates	glass	**1.05729.0001**
	5 x 20	100 plates	glass	**1.05714.0001**
	5 x 20	25 plates	glass	**1.05808.0001**
	5 x 10	200 plates	glass	**1.05719.0001**
	5 x 10	25 plates	glass	**1.05789.0001**
	2.5 x 7.5	100 plates	glass	**1.15327.0001**
	2.5 x 7.5	500 plates	glass	**1.15341.0001**
Silica gel 60 W F_{254s}	20 x 20	25 plates	glass	**1.16485.0001**
LuxPlate® silica gel 60 F_{254}	20 x 20	25 plates	glass	**1.05805.0001**
	10 x 20	50 plates	glass	**1.05804.0001**
	5 x 20	100 plates	glass	**1.05803.0001**
	5 x 10	25 plates	glass	**1.05802.0001**
	2.5 x 7.5	100 plates	glass	**1.05801.0001**
Silica gel 60*	20 x 20	25 plates	aluminium	**1.05553.0001**
	5 x 10	50 plates	aluminium	**1.16835.0001**
Silica gel 60 W*	20 x 20	25 plates	aluminium	**1.16487.0001**
Silica gel 60 F_{254}*	20 x 20	25 plates	aluminium	**1.05554.0001**
	10 x 20	25 plates	aluminium	**1.05570.0001**
	5 x 10	50 plates	aluminium	**1.16834.0001**
	5 x 7.5	20 plates	aluminium	**1.05549.0001**
	500 x 20	1 roll	aluminium	**1.05562.0001**
Silica gel 60 W F_{254s}*	20 x 20	25 plates	aluminium	**1.16484.0001**
Silica gel 60*	20 x 20	25 plates	plastic	**1.05748.0001**
Silica gel 60 F_{254}*	20 x 20	25 plates	plastic	**1.05735.0001**
	4 x 8	50 plates	plastic	**1.05750.0001**
	500 x 20	1 roll	plastic	**1.05749.0001**

Layer thickness: 250µm | * = 200µm | W: water resistant | F245: fluorescent indicator | F254s: acid stable fluorescent indicator

HPLTC High Performance silica plates

For analysis of complex samples.

HPTLC Unmodified Silica Gel 60

Packing Material	Format [cm]	Content	Backing	P/N
HPTLC silica gel 60	20 x 10	50 plates	glass	**1.05641.0001**
	10 x 10	25 plates	glass	**1.05631.0001**
	10 x 10	100 plates	glass	**1.05633.0001**
HPTLC silica gel 60 F_{254s}	20 x 10	25 plates	glass	**1.15696.0001**
HPTLC silica gel 60 F_{254}	20 x 10	50 plates	glass	**1.05642.0001**
	10 x 10	25 plates	glass	**1.05628.0001**
	10 x 10	100 plates	glass	**1.05629.0001**
	5 x 10	25 plates	glass	**1.05616.0001**
HPTLC silica gel 60	20 x 20	25 plates	aluminium	**1.05547.0001**
HPTLC silica gel 60 F_{254}	20 x 20	25 plates	aluminium	**1.05548.0001**
	5 x 7.5	20 plates	aluminium	**1.05556.0001**
HPTLC silica gel 60 WR F_{254s}	20 x 10	25 plates	glass	**1.15552.0001**
HPTLC silica gel 60 F_{254} AMD, extra thin*	20 x 10	25 plates	glass	**1.11764.0001**
HPTLC silica gel 60 WR F_{254s} AMD, extra thin*	20 x 10	25 plates	glass	**1.12363.0001**
HPTLC silica gel 60 F_{254} premium purity plate	20 x 20	25 plates	glass	**1.05648.0001**

Layer thickness: 200µm | * Layer thickness: 100µm | WR: water resistant and higher purity

PLC Preparative Layer Plates

For enrichment and purification of analytes in large quantities

PLC Silica Gel 60

Packing Material	Format [cm]	Layer thickness	Content	Backing	P/N
PLC silica gel 60	20 x 20	0.5mm	20 plates	glass	**1.13894.0001**
	20 x 20	2mm	12 plates	glass	**1.05745.0001**
PLC silica gel 60 F_{254}	20 x 20	0.5mm	20 plates	glass	**1.05744.0001**
	20 x 20	1mm	15 plates	glass	**1.13895.0001**
	20 x 20	2mm	12 plates	glass	**1.05717.0001**
PLC silica gel 60 $F_{254+366}$	20 x 20	2mm	12 plates	glass	**1.05637.0001**
PLC silica RP-18 F_{254s}	20 x 20	1mm	15 plates	glass	**1.05434.0001**

PLC Aluminium Oxide 60 &150

Packing Material	Format [cm]	Layer thickness	Content	Backing	P/N
PLC aluminium oxides 60 F_{254}	20 x 20	1.5mm	12 plates	glass	**1.05788.0001**
PLC aluminium oxides 150 F_{254}	20 x 20	1.5mm	12 plates	glass	**1.05726.0001**

PLC Concentrating Zone Plates

Packing Material	Format [cm]	Layer thickness	Content	Backing	P/N
Silica gel 60 F_{254}	20 x 20	0.5mm	20 plates	glass	**1.13794.0001**
concentrating zone 4 x 20 cm	20 x 20	1mm	15 plates	glass	**1.13792.0001**
	20 x 20	2mm	12 plates	glass	**1.13793.0001**

Aluminium Oxide Plates

For basic and neutral compounds using different pH conditions.

Packing Material	Format [cm]	Layer thickness	Content	Backing	P/N
Aluminium oxide 60 F_{254} basic	20 x 20	250µm	25 plates	glass	**1.05713.0001**
Aluminium oxide 60 F_{254} basic	5 x 20	250µm	100 plates	glass	**1.05731.0001**
Aluminium oxide 60 F_{254} neutral	20 x 20	200µm	25 plates	aluminium	**1.05550.0001**
Aluminium oxide 60 F_{254} neutral	20 x 20	200µm	25 plates	plastic	**1.05581.0001**

Packing Material	Format [cm]	Layer thickness	Content	Backing	P/N
Aluminium oxide 150 F_{254} neutral	20 x 20	200µm	25 plates	aluminium	**1.05551.0001**

Modified Silica Plates

Rp-Modified Silica Plates (TLC & HPTLC)

Packing Material	Format [cm]	Content	Backing	P/N
Silica gel 60 RP-2 (silanized)*	20 x 20	25 plates	glass	**1.05746.0001**
Silica gel 60 RP-2 F_{254} (silanized)*	20 x 20	25 plates	glass	**1.05747.0001**
Silica gel 60 RP-8 F_{254s}*	20 x 20	25 plates	glass	**1.15388.0001**
	10 x 20	50 plates	glass	**1.15424.0001**
	5 x 20	50 plates	glass	**1.15682.0001**
	5 x 10	25 plates	glass	**1.15684.0001**
Silica gel 60 RP-18 F_{254s}*	20 x 20	25 plates	glass	**1.15389.0001**
	10 x 20	50 plates	glass	**1.15423.0001**
	5 x 20	50 plates	glass	**1.15683.0001**
	5 x 10	25 plates	glass	**1.15685.0001**
Silica gel 60 RP-18 F_{254s}	20 x 20	20 plates	aluminium	**1.05559.0001**
	5 x 7.5	20 plates	aluminium	**1.05560.0001**
HPTLC silica gel 60 RP-2 F_{254s}	10 x 10	25 plates	glass	**1.13726.0001**
HPTLC silica gel 60 RP-8 F_{254s}	10 x 10	25 plates	glass	**1.13725.0001**
HPTLC silica gel 60 RP-18	20 x 10	25 plates	glass	**1.05914.0001**
HPTLC silica gel 60 RP-18 W	20 x 10	25 plates	glass	**1.14296.0001**
HPTLC silica gel 60 RP-18 F_{254s}	20 x 10	25 plates	glass	**1.16225.0001**
	10 x 10	25 plates	glass	**1.13724.0001**
HPTLC silica gel 60 RP-18 W F_{254s}	10 x 10	25 plates	glass	**1.13124.0001**

Layer thickness: 200µm | * Layer thickness: 250µm | W: fully wettable with water

CN, Diol, NH2 Modified Silica Plates (TLC & HPTLC)

Packing Material	Format [cm]	Content	Backing	P/N
Silica gel 60 NH2 F254s	20 x 20	20 plates	aluminium	**1.05533.0001**
HPTLC silica gel 60 CN F254s	10 x 10	25 plates	glass	**1.16464.0001**
HPTLC silica gel 60 Diol F254s	10 x 10	25 plates	glass	**1.12668.0001**
HPTLC silica gel 60 Diol F254s	20 x 10	25 plates	glass	**1.05636.0001**
HPTLC silica gel 60 NH2	20 x 10	25 plates	glass	**1.12572.0001**
HPTLC silica gel 60 NH2 F254s	20 x 10	25 plates	glass	**1.13192.0001**
HPTLC silica gel 60 NH2 F254s	10 x 10	25 plates	glass	**1.15647.0001**

Layer thickness: 200µm

Cellulose Plates

Packing Material	Format [cm]	Content	Backing	P/N
Cellulose	20 x 20	25 plates	glass	**1.05716.0001**
	10 x 20	50 plates	glass	**1.05730.0001**
	10 x 10	100 plates	glass	**1.05632.0001**
Cellulose F	20 x 20	25 plates	glass	**1.05718.0001**
	10 x 20	50 plates	glass	**1.05728.0001**
Cellulose	20 x 20	25 plates	aluminium	**1.05552.0001**
	500 x 20	1 roll	aluminium	**1.05563.0001**
Cellulose F	20 x 20	25 plates	aluminium	**1.05574.0001**
Cellulose	20 x 20	25 plates	plastic	**1.05577.0001**
Cellulose F	20 x 20	25 plates	plastic	**1.05565.0001**
HPTLC cellulose	20 x 10	50 plates	glass	**1.05786.0001**
	10 x 10	25 plates	glass	**1.05787.0001**
HPTLC cellulose F	20 x 10	50 plates	glass	**1.15036.0001**
	10 x 10	25 plates	glass	**1.15035.0001**
HPTLC cellulose	20 x 20	25 plates	aluminium	**1.16092.0001**
PEI cellulose F	20 x 20	25 plates	glass	**1.05725.0001**
PEI cellulose F	20 x 20	25 plates	plastic	**1.05579.0001**

PEI cellulose plates should be stored cold and dry to reduce deterioration. As plates become old they might take a yellow coloration and should be discarded.
F: fluorescence indicator with exitation wavelength 254/366 nm.

Concentrating Zone Plates

From small to large volume of diluted samples

Packing Material	Format [cm]	Content	Backing	P/N
Silica gel 60 concentrating zone 2.5 x 20 cm	20 x 20	25 plates	glass	**1.11845.0001**
Silica gel 60 concentrating zone 2.5 x 10 cm	10 x 20	50 plates	glass	**1.11844.0001**
Silica gel 60 concentrating zone 2.5 x 20 cm*	20 x 20	25 sheets	aluminium	**1.05582.0001**
Silica gel 60 F_{254} concentrating zone 2.5 x 20 cm	20 x 20	25 plates	glass	**1.11798.0001**
Silica gel 60 F_{254} concentrating zone 2.5 x 10 cm	10 x 20	50 plates	glass	**1.11846.0001**
Silica gel 60 F_{254} concentrating zone 2.5 x 20 cm*	20 x 20	25 sheets	aluminium	**1.05583.0001**

Layer thickness: 250 µm | * Layer thickness: 200 µm.

HPTLC Concentrating Zone Plates

Packing Material	Format [cm]	Content	Backing	P/N
HPTLC silica gel 60 concentrating zone 2.5 x 20 cm	20 x 10	50 plates	glass	**1.13749.0001**
HPTLC silica gel 60 concentrating zone 2.5 x 10 cm	10 x 10	25 plates	glass	**1.13748.0001**
HPTLC silica gel 60 F_{254} concentrating zone 2.5 x 20 cm	20 x 10	50 plates	glass	**1.13728.0001**
HPTLC silica gel 60 F_{254} concentrating zone 2.5 x 10 cm	10 x 10	25 plates	glass	**1.13727.0001**
HPTLC silica gel 60 F_{254} concentrating zone 2.5 x 5 cm	5 x 10	25 plates	glass	**1.13187.0001**
HPTLC silica gel 60 RP-18 PAH concentrating zone 2.5 x 20 cm	20 x 10	25 plates	glass	**1.15037.0001**
HPTLC silica gel 60 RP-18 F_{254s} concentrating zone 2.5 x 20 cm	20 x 10	25 plates	glass	**1.15498.0001**

Layer thickness: 200 µm

PLC Concentrating Zone Plates, Glass Backed

Packing Material	Format [cm]	Layer thickness	Content	P/N
Silica gel 60 F254 concentrating zone 4 x 20 cm	20 x 20	0.5mm	20 plates	**1.13794.0001**
	20 x 20	1mm	15 plates	**1.13792.0001**
	20 x 20	2mm	12 plates	**1.13793.0001**

PreteoChrom® HPLTC Plates

For peptide analysis

Packing Material	Format [cm]	Layer thickness	Content	Backing	P/N
ProteoChrom® HPTLC silica gel 60 F_{254s}	20 x 10	100µm	25 plates	glass	**1.05650.0001**
ProteoChrom® HPTLC Cellulose	10 x 10	100µm	25 sheets	aluminium	**1.05651.0001**

Each ProteoChrom® package includes an insert sheet with detailed instructions for solvent systems, running conditions and staining solution, enabling straightforward experiments without time-consuming optimization work.

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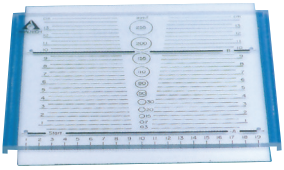
TLC Accessories

Calibrated Disposable Micropipettes

Designation		P/N	Qty
Calibrated Disposable Micropipettes	0.1µl	**897810**	100u
	0.2µl	**898030**	100u
	0.5µl	**898060**	100u
	1.0µl	**248440**	100u
	2.0µl	**332680**	100u
	3.0µl	**CD4780**	100u
	4.0µl	**897110**	100u
	5.0µl	**366060**	100u
	8.0µl	**897100**	100u
	10.0µl	**281160**	100u
Calibrated Disposable Micropipettes (1,2,3,4 and 5µl)		**T91920**	250u
Non Calibrated Disposable Micropipettes (9µl)		**T91921**	300u

TLC Spotting Guide


850660

Transparent spotting guide may be used with plates uo to 20x20cm. The guide rests above the surface of the plate without contacting the adsorbent layer, avoiding damage to the layer. The metric scale on the spotting guide facilitates reading of Rf values.

Designation	P/N
TLC Spotting guide	**850660**

Plastic Rack


CD4810

Designation	P/N
Plastic rack	**CD4810**

TLC Syringe

These special syringes minimize sample "creep back" and enhance reproductibility

- 51mm flat needle length
- PTFE plunger tips

Model	Volume	Gauge/length	SNTLC	RNTLC	Replacement needle
1701	10µl	(26s/2"/3T)	**80050**	**80055**	**80472**
1702	25µl	(22s/2"/3T)	**80250**	**80255**	**80475**
1705	50µl	(22/2"/3T)	**80950**	**80955**	**80477**
1710	100µl	(22/2"/3T)	**81050**	**81055**	**80477**
1725	250µl	(22/2"/3T)	**81150**	**81155**	**80777**
1750	500µl	(22/2"/3T)	**81250**	**81255**	**80777**

Developping Chambers

CD5260

CD5270

Development Tanks

Designs for development of 10x10cm or smaller plates. Reduces the amount of solvent needed for development. Some chambers are supply with Latch-Lid cover for a best closing.

Developpings tanks for 10x10cm

Designation	Lxlxh	number of TLC plate	P/N	Replacement lid
Thinline Latch-Lid Tank unit	12x6.4x11.5	2	**CD4960**	**CD5260**
Thinline Tank and lid unit	12x6.4x11.5	2	**CD4970**	**CD5240**
Standard Latch-Lid Tank unit with aluminium rack	12x8.6x11.5	6	**CD4990**	**CD5270**
Standard Latch-Lid Tank unit	12x8.6x11.5	6	**CD5000**	**CD5270**
Standard Tank and Lid unit	12x8.6x11.5	6	**CD5020**	**CD5230**

Developping Tanks

Designation	Diameter	P/N	Replacement lid
Rectangular chamber			
For 20x20cm TLC plates	25 x 28 x 7.5	**204380**	**CD5140**
For 10x20cm TLC plates (horizontal)	13 x 28 x 7.5	**T33400**	**CD5140**
Rectangular Latch-Lid Chambers			
For 20x20cm TLC plates	25 x 28 x 7.5	**CD4830**	**CD5140**
For 10x20cm TLC plates (horizontal)	13 x 28 x 7.5	**CD4840**	**CD5140**
Cylindrical Chambers			
For 5x20cm TLC plates (vertical)	21.5 x 7.5	**AH1460**	**CD5210**
For 10x20cm TLC plates (vertical)	22.5 x 14.5	**S62420**	**CD5220**
Micro chambers			
For 2.5x10cm (pkg of 3)	10.5 x 4.4	**AH1471**	**CD5250**
For 2.5x10cm plates (1 each)	10.5 x 4.4	**AH1470**	**CD5251**

All tanks are supplied with a suitable cover.

Derivapress

Colour developing chamber for Thin Layer Chromatography Optimal development of your TLC plates

As easy to use as opening and closing a book, the Derivapress® immersion-based development system provides a high-performance, safe and economic alternative for perfecting this essential step in Thin Layer Chromatography (TLC) and for moving towards quantitative and semi-quantitative TLC.

- Homogeneous and clear development of all TLC plates
- Plate completely processed in 3 seconds
- Optimal reproducibility before digitising and classifying your TLC analyses
- The Derivamouss® transfer pad is reusable depending on the nature of the reagent
- Healthy and clean working environment: no spillage and no dangerous safeguards or toxic fumes

Designation		Derivapress	Derivamousse
Standard version	20 x 20cm	**CA7780**	**CA7800**
Compact version	10 x 10cm	**CA7790**	**CA7820**

TLC Reagent Sprayer

A glass sprayer with a specially designed head to eliminate formation of droplets ans spattering. This feature assures delivery of a fine misty spray and ends problems from uneven discharge.

Designation	P/N
Full sprayer 100ml NS19/26	**594340**
Replacement head	**594351**

Test tubes

Test Tubes - Borosilicate Glass

Manufactured from Type 1B neutral glass - More resistant to thermal shock than soda glass - Pharmaceutical grade

Capacity (mL)	OD x width (mm)	Thickness	P/N	Qty
4	10 x 75	- - -	**AQRSN0**	1000u
5	12 x 55	- - -	**- - -**	- - -
6	12 x 75	- - -	**AQRSK0**	1000u
8	13 x 75	- - -	**- - -**	- - -
10	13 x 100	0.6mm	**BH3901**	1000u
15	16 x 100	0.7mm	**BX5390**	1000u
20	16 x 125	0.7mm	**ARYM10**	1000u
22	16 x 150	0.7mm	**BX5400**	1000u
30	18 x 150	0.8mm	**AW3842**	500u
32	18 x 180	- - -	**1Q5350**	100u
35	21 x 150	- - -	**FL1120**	500u
60	25 x 150	- - -	**BH3911**	500u
110	29.5 x 200	- - -	**DT8250**	100u

Test Tubes - Polystyrene

Manufactured from virgin polystyrene
Suitable for general laboratory use

Capacity (mL)	OD x width (mm)	Thickness	P/N	Qty
4	10 x 75	1.0mm	**- - -**	- - -
5	12 x 55	- - -	**ARXYO0**	1000u
6	12 x 75	1.0mm	**- - -**	- - -
8	13 x 75	- - -	**ARXYP0**	1000u
10	13 x 100	- - -	**- - -**	- - -
15	16 x 100	1.2mm	**ARXYQ0**	2000u
20	16 x 125	1.2mm	**- - -**	- - -
22	16 x 150	1.2mm	**ARXYU0**	1000u
30	18 x 150	1.2mm	**- - -**	- - -

Test Tube Caps

Manufactured from polyethylene
A range of finned caps
Suitable for glass and plastic rimless test tubes

OD tubes	P/N	Qty
12mm	**ARYD20**	1000u
13 mm	**ARYD30**	1000u
16mm	**ARYD40**	1000u

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Culture tubes

Culture Tubes - Borosilicate glass

Manufactured from Type 1B neutral glass - More resistant to thermal shock than soda glass
Pharmaceutical grade

Capacity (mL)	OD x width (mm)	Thread	Thickness	P/N	Qty
10	13 x 100	13mm	0.9mm	**ARX3C0**	10u
15	16 x 100	15mm	1.05mm	**FK8505**	1000u
19	16 x 125	15mm	1.05mm	**ARX3B0**	1000u
22	16 x 150	15mm	1.05mm	**ARX3E0**	1000u
25	20 x 125	18mm	1.2mm	**ARX3F0**	500u

	Designation	P/N	Qty
13mm	Polypropylene Screw Cap	**ARY3G0**	1000u
15mm	Polypropylene Screw Cap	**ARY3H0**	1000u

Culture Tubes - Pyrex Glass

Manufactured from Pyrex® borosilicate glass for high resistance to thermal shock and chemical attack
Allow use at high temperature up to 500°

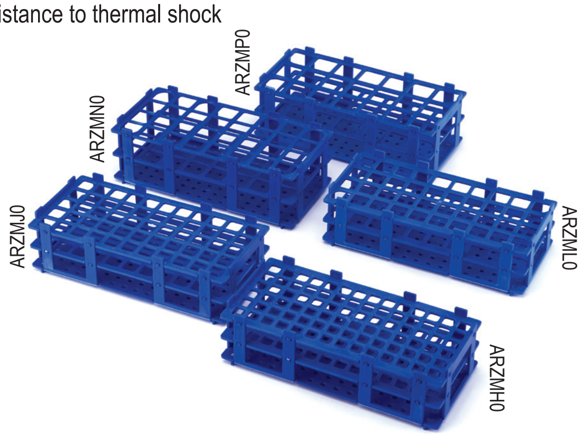
Capacity (mL)	OD x width (mm)	Thread	Thickness	P/N	Qty
15	16 x 100	15mm	1.8mm	**AS2QS0**	40u
19	16 x 125	15mm	1.8mm	**AS2QT0**	40u
22	16 x 160	15mm	1.8mm	**AS2QV0**	40u
	18 x 100	18mm	1.8mm	**AS2QW0**	40u

	Screw caps(PBT) with rubber/PTFE septa/20u	Rubber / PTFE septa /20u
13mm	**AW3BM0**	**AWGXN0**
15mm	**AW3CZ0**	**AWGXO0**
15mm	**AW3ET**	**AWGXP0**

Racks for Test Tubes & Culture Tubes (Polypropylene)

Manufactured from Pyrex® borosilicate glass for high resistance to thermal shock and chemical attack
Allow use at high temperature up to 500°

OD tubes mm	Nb places	Blue / 5u	White / 5u
13	84	**ARZMH0**	**ARZMI0**
18	55	**ARZMJ0**	**ARZMK0**
21	40	**ARZML0**	**ARZMM0**
26	32	**ARZMN0**	**ARZMO0**
31	21	**ARZMP0**	**ARZMQ0**



Solvent Bottles

Bottles, Round Shape

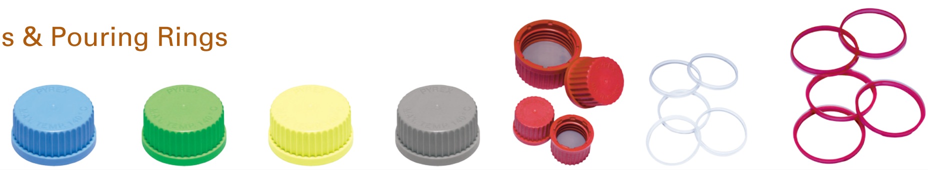
Clear Glass | Clear Glass with plastic coated | Amber Glass

Capacity (mL)	Height x OD (mm)	Thread	Qty	Cap & pouring ring	High temp cap & pouring ring	Without cap	without cap	without cap
25	70 x 36	GL25	10u	**ARZKV0**	**ARZL80**	**ARZLG0**	- - -	**ARZLU0**
50	88 x 46	GL32	10u	**ARZKW0**	**ARZL90**	**ARZLH0**	- - -	**ARZLV0**
100	100 x 56	GL45	10u	**ARZKX0**	**ARZLA0**	**ARZLI0**	**ARZND0**	**ARZLW0**
150	105 x 62	GL45	10u	**ARZKY0**	- - -	**ARZLJ0**	- - -	- - -
250	138 x 70	GL45	10u	**BV2765**	**ARZLB0**	**ARZLK0**	**ARZNE0**	**ARZLX0**
500	176 x 86	GL45	10u	**ARZKZ0**	**ARZLC0**	**ARZLL0**	**ARZNF0**	**AQBQE1**
750	203 x 95	GL45	10u	**ARZL00**	- - -	**ARZLM0**	- - -	- - -
1 000	225 x 101	GL45	10u	**ARZL10**	**ARZLD0**	**ARZLN0**	**ARZNJ0**	**AQBQF1**
2 000	260 x 136	GL45	10u	**ARZL20**	**ARZLE0**	**ARZLO0**	**ARZNG0**	**ARZLY0**
3 500	295 x 160	GL45	1u	**ARZL30**	- - -	**ARZLP0**	- - -	- - -
5 000	330 x 181	GL45	1u	**ARZL40**	**ARZLF0**	**ARZLQ0**	**ARZNH0**	**AQBQG0**
10 000	410 x 227	GL45	1u	**ARZL50**	- - -	**ARZLR0**	**ARZNJ0**	**ARZLZ0**
15 000	465 x 258	GL45	1u	**ARZL60**	- - -	- - -	- - -	- - -
20 000	510 x 300	GL45	1u	**ARZL70**	- - -	**ARZLS0**	- - -	- - -

Bottles, Square Shape

Capacity (mL)	Height x OD (mm)	Thread	Qty	P/N
100	109 x 50	GL32	10u	**ARZM00**
250	143 x 64	GL45	10u	**HP615R**
500	181 x 78	GL45	10u	**ARZM10**
1 000	222 x 94	GL45	10u	**ARZM20**

Screwcaps & Pouring Rings



Thread	Qty	Light blue	Green	Yellow	Grey	Red caps	Pouring Rings	Pouring rings high temp
GL25	10u	**ARZM30**	- - -	- - -	- - -	**ARZM90**	- - -	- - -
GL32	10u	**ARZM40**	- - -	- - -	- - -	**ARZMA0**	**ARZME0**	**ARZMG0**
GL45	10u	**AQBQH0**	**ARZM50**	**ARZM60**	**ARZM70**	**AQBQM0**	**AQBQN0**	**AQBQO0**

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Screw Storage Vials - Conical Bottom

Borosilicate Glass - Type I

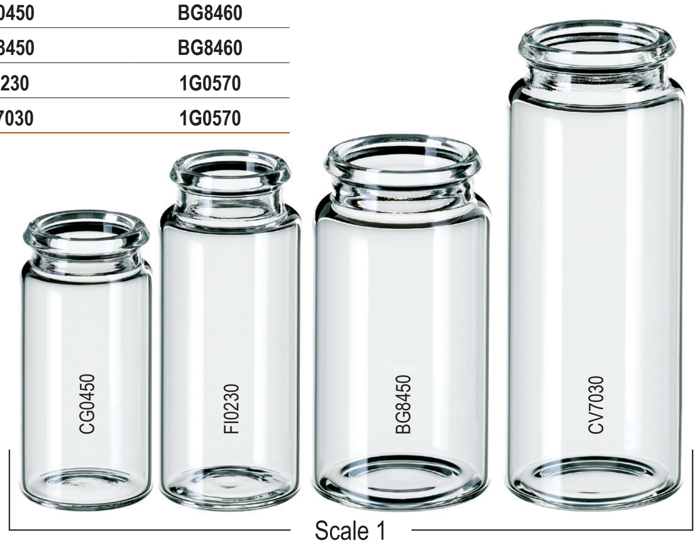
Capacity (mL)	Height x OD (mm)	Thread	100u	250u	500u	1000u
10	19 x 70	22-400	**1E4161**	**- - -**	**1E4162**	**- - -**
20	26,5 x 67	24-400	**1E4171**	**- - -**	**1E4172**	**- - -**

Screw Caps

Thread	Phenolic black caps - Closed Rubber / PTFE	PP white caps - Closed Silicone / PTFE	PP black caps - Open Silicone / PTFE	PP White caps - Open Silicone / PTFE	PP Black caps - Open Silicone/PTFE slit
22-400	**ARZA20 / 100u**	**ARZA70 / 100u**	**- - -**	**ARZAD0 / 100u**	**- - -**
24-400	**ARZA31 / 100u**	**ARZA80 / 100u**	**- - -**	**ARZAE0 / 100u**	**- - -**

Snap Storage Vials

Capacity (mL)	Height x OD (mm)	Thread	Snap Vials - Clear Glass - type 3 PN / 1000u	Snap Caps - PE PN / 1000u
5	40x20	ND18	**CG0450**	**BG8460**
10	50x22	ND18	**BG8450**	**BG8460**
15	48x26	ND22	**FI0230**	**1G0570**
25	65x26	ND22	**CV7030**	**1G0570**



Screw Storage Vials

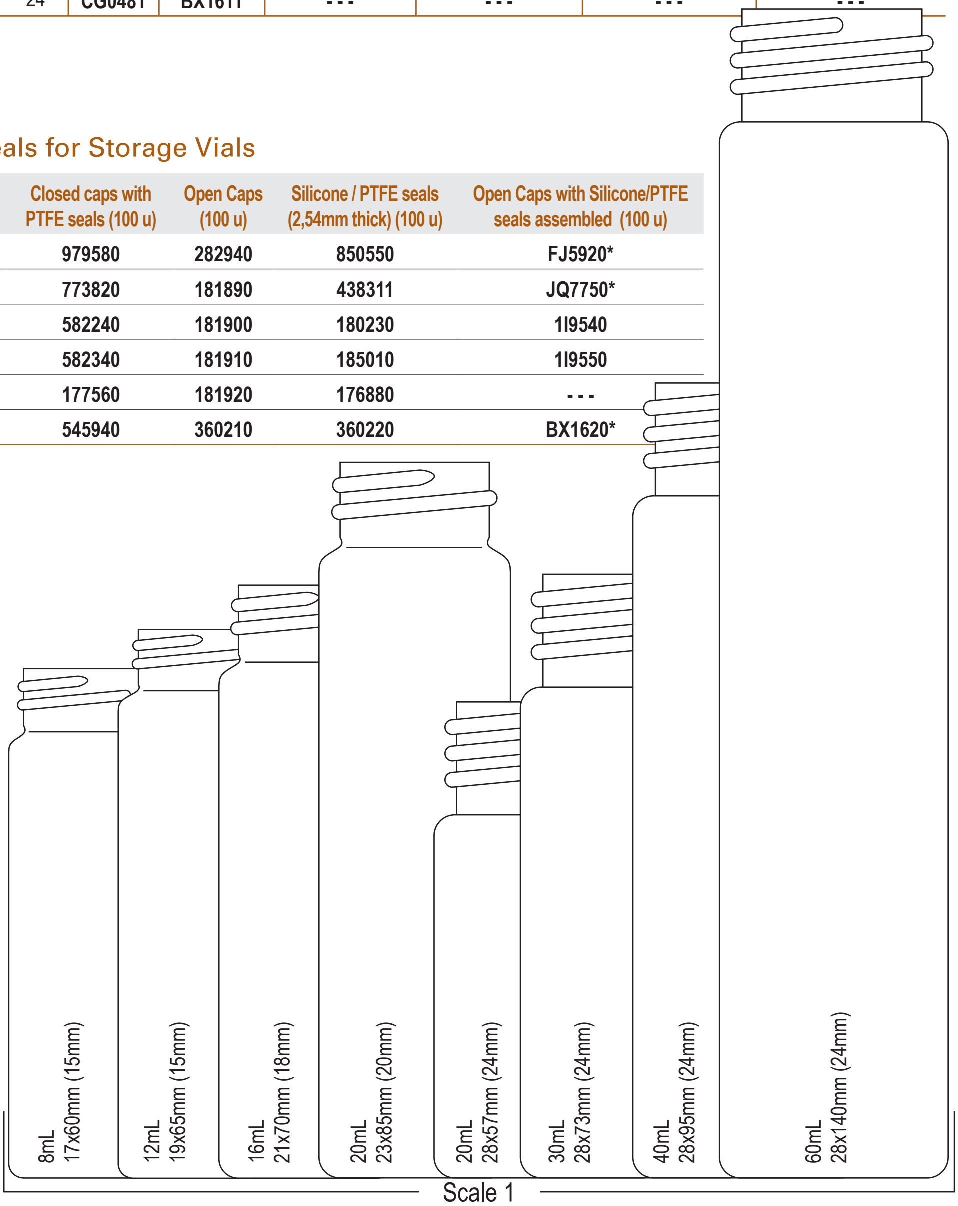
Vials & Kits

Capacity (mL)	Dim (mm)	OD caps (mm)	Vials		Unassembed kits			
			Clear Vials (100 u)	Amber Vials (100 u)	Clear vials + Closed caps with PTFE seals (100 u)	Amber vials + Closed caps with PTFE seals (100 u)	Clear vials + open caps + Silicone/ PTFE seals (100 u)	Amber vials + open caps + Silicone/ PTFE seals (100 u)
8	17x60	15	**181860***	**667620***	**690250***	**690320***	**690390***	**690460***
12	19x65	15	**667630***	**667640***	**690260***	**690330***	**690400***	**690470***
16	21x70	18	**181870***	**167470***	**690270***	**690350***	**690410***	**690480***
20	23x85	20	**181880***	---	**690280***	---	**690420***	---
20	28x57	24	**CK1541**	**CE0831**	---	---	---	---
30	28x73	24	**CH5491**	**CK8251**	---	---	---	---
40	28x95	24	**217490**	**360250**	**690290**	**690360**	**690430**	**690500**
60	28x140	24	**CG0481**	**BX1611**	---	---	---	---

*200u

Caps & Seals for Storage Vials

Thread size	Closed caps with PTFE seals (100 u)	Open Caps (100 u)	Silicone / PTFE seals (2,54mm thick) (100 u)	Open Caps with Silicone/PTFE seals assembled (100 u)
8mm / 8-425	**979580**	**282940**	**850550**	**FJ5920***
13mm / 13-425	**773820**	**181890**	**438311**	**JQ7750***
15mm / 15-425	**582240**	**181900**	**180230**	**1I9540**
18mm / 18-400	**582340**	**181910**	**185010**	**1I9550**
20mm / 20-400	**177560**	**181920**	**176880**	---
24mm / 24-414	**545940**	**360210**	**360220**	**BX1620***



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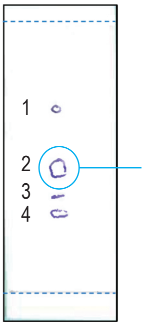
Applications

Purification of Phenanthrolines

TLC method development

Mobile phase:
95% CH_2Cl_2 / MeOH 5%



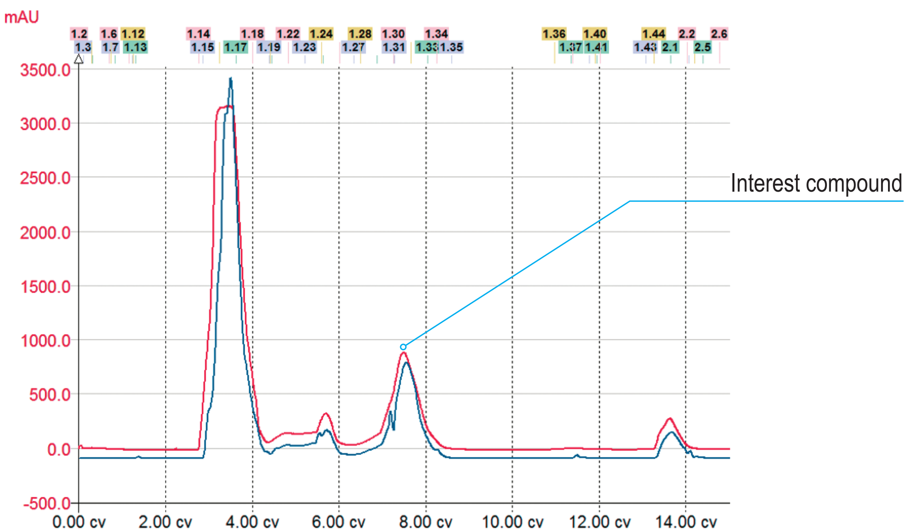
Compound	Rf	CV
1	0.67	1.49
	$\Delta CV_{1\text{-}2} = 0.73$	
2	**0.45**	**2.22**
	$\Delta CV_{2\text{-}3} = 0.64$	
3	0.35	2.86
4	0.28	3.57

Purification

Sample: Crude 450mg
Column: PF-15SIHP-F0040
Instrument: puriFlash® 4125
Injection mode: Solid deposit with Celite (Dry-Load F0004)
Flow rate: 26mL/min
Solvents: A- CH_2Cl_2 / B- MeOH
Elution conditions:

CV	%A	%B
0.00	99	1
10.72	99	1
19.98	90	10

Detection: UV 250nm (blue curve), ELSD (T°: 35°C; Automatic gain) (red curve)



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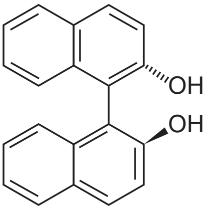
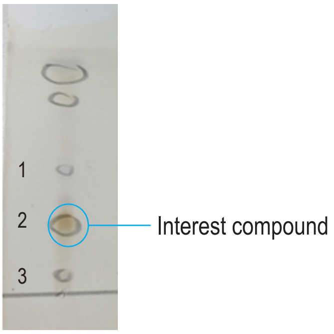
Purification of Binol



TLC method development

Mobile phase: Hexane / MTBE



Compound	Rf	CV
1	0.50	2.00
	$\Delta CV_{1\text{-}2}$ = 1.33	
2	**0.30**	**3.33**
	$\Delta CV_{2\text{-}3}$ = 6.67	
3	0.10	10

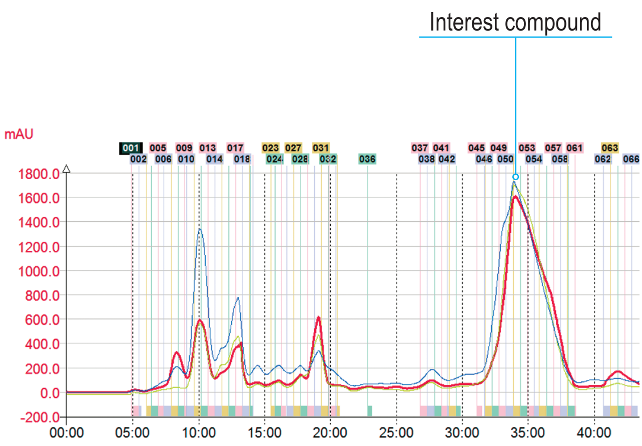
According to ΔCV calcultation compound 1 and 2 are criticals to separate.
The interest compound is compound 2.

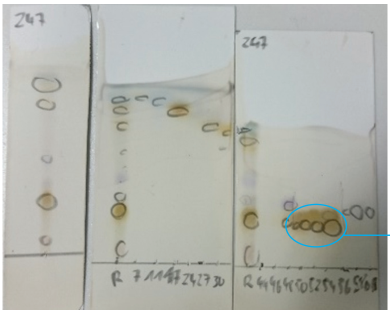
Purification

Sample: Crude 1g
Column: PF-30SIHP-F0120
Instrument: puriFlash® 450-iELSD
Injection mode: Solid deposit with celite (Dry-load F0012)
Flow rate: 46mL/min
Solvents: A-Hexane / B-MTBE
Elution conditions:

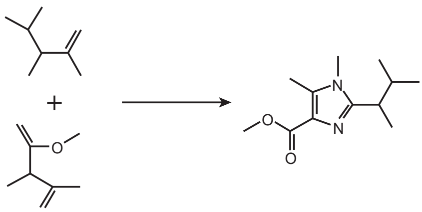
CV	%A	%B
0.00	88	12
1.00	88	12
11.00	25	75
13.50	25	75
14.50	10	90
16.00	10	90

Detection: UV 280nm (green) & 300nm (blue), UV SCAN 250-600nm (red)



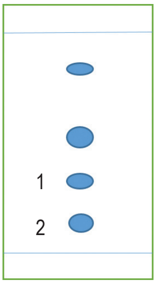


Purification of Imidazole



TLC method development

Mobile phase:
33% Petroleum Ether / Ethyl Ether 67%



Compound	Rf	CV
1	**0.425**	**2.35**
	$\Delta CV_{1\text{-}2}$ = 2.65	
2	**0.200**	**5.00**

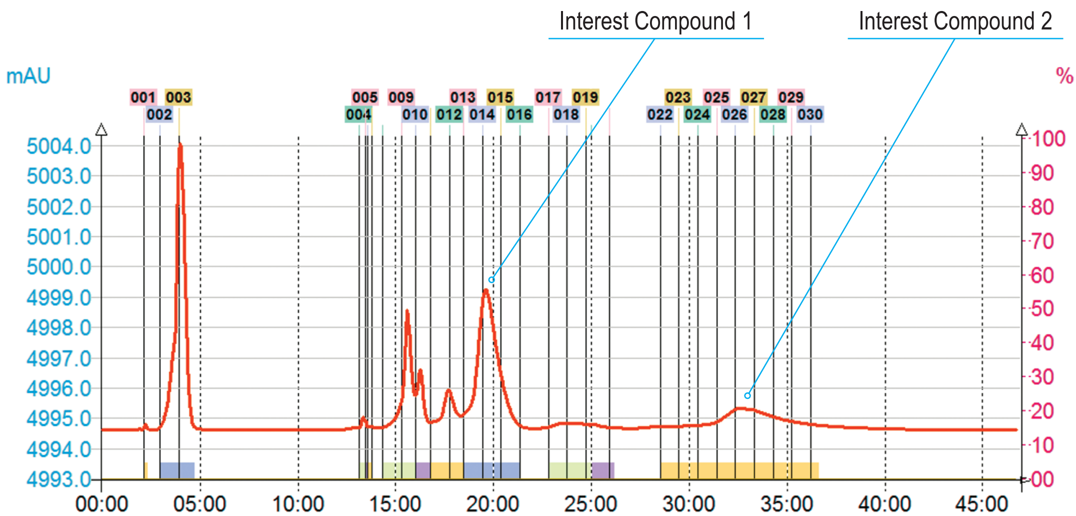
Purification

Sample: Crude 700mg
Column: PF-15SIHP-F0040
Instrument: puriFlash®-XS 420Plus
Injection mode: Liquid injection
Flow rate: 26mL/min
Solvents: A-Petroleum Ether / B-Ethyl Ether

Elution conditions:

CV	%A	%B
0	98	2
1	98	2
11	33	67
13	33	67

Detection: UV 260nm
Pressure: 2bar



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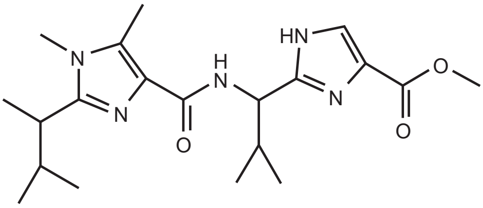
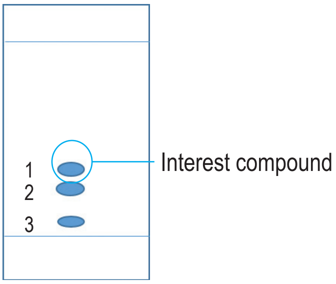
Purification of Imidazole



TLC method development

Mobile phase:
74% Dichloromethane / Ethyl Ether 24% / Methanol 2%



Compound	Rf	CV
1	**0.33**	**3.03**
	$\Delta CV_{1\text{-}2}$ = 2.85	
2	0.17	5.88
3	0.07	14.29

According to ΔCV calcultation compound 1 and 2 are criticals to separate.
The interest compound is compound 1.

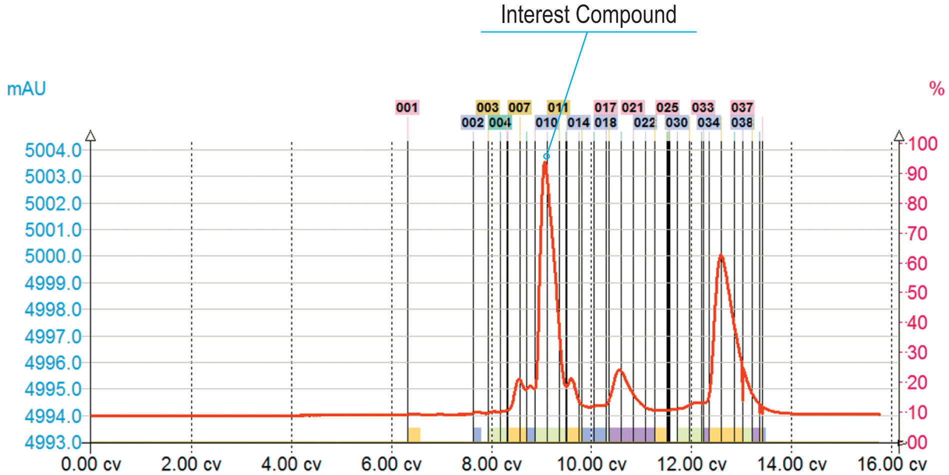
Purification

Sample: Crude 400 mg
Column: PF-15SIHP-F0025
Instrument: puriFlash®-XS 420Plus
Injection mode: Liquid injection
Flow rate: 15mL/min
Solvents: A- Dichloromethane
B- Ethyl Ether with Methanol

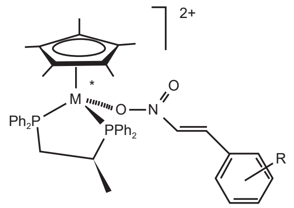
Elution conditions:

CV	%A	%B
0	94	6
1	94	6
1	50	50
13	50	50
16	50	50

Detection: UV 260nm
Pressure: 5bar

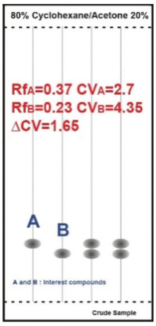


Purification of Organo-Metallic



TLC method development

Mobile phase:
80% Cyclohexane / Acetone 20%



Ethyl acetate is very use in flash purification but this solvent adsorbs from 200 up to 250nm. Compounds absorb at the same wavelength range. Acetone is an alternative to ethyl acetate.

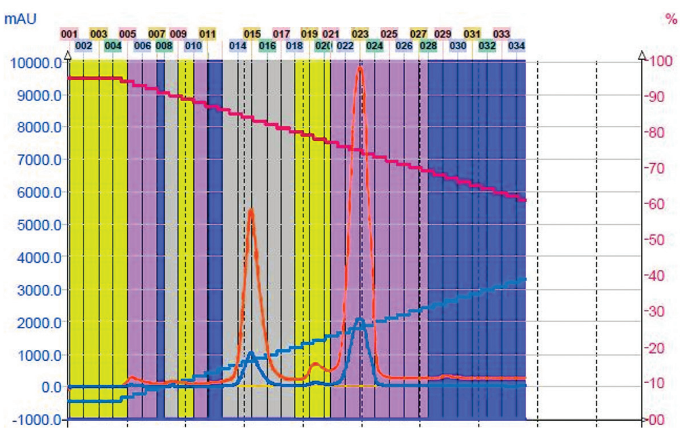
Adaptation of TLC conditions to get at least one interest compound between Rf 0.05 & 0.35

Purification

Sample: Crude 100mg
Column: PF-30SIHP-F0025
Instrument: puriFlash® 450
Injection mode: Solid deposit with celite (Dry-load F0004)
Flow rate: 20mL/min
Solvents: A-Cyclohexane, B-Acetone
Elution conditions:

CV	%A	%B
0	95	5
1	95	5
11	60	40
13	60	40

Detection: UV 220nm (blue) + Scan UV 200-230nm (orange)



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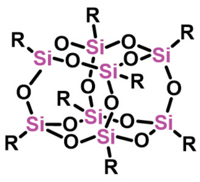
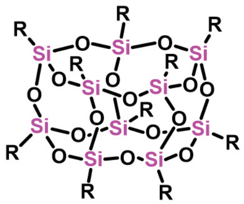
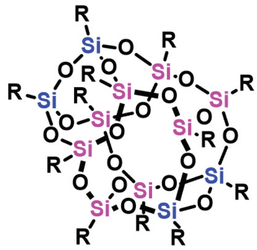
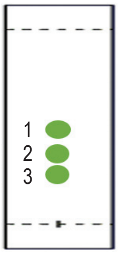
Purification of 3 Polyhedral Oligosilsesquixanes

TLC method development

Mobile phase:
70% Hexane/CH_2Cl_2 30%



Compound	Rf	CV
1	0.33	3.03
	$\Delta CV_{1\text{-}2}$ = 0.54	
2	0.28	3.57
	$\Delta CV_{2\text{-}3}$ = 0.60	
3	0.24	4.17

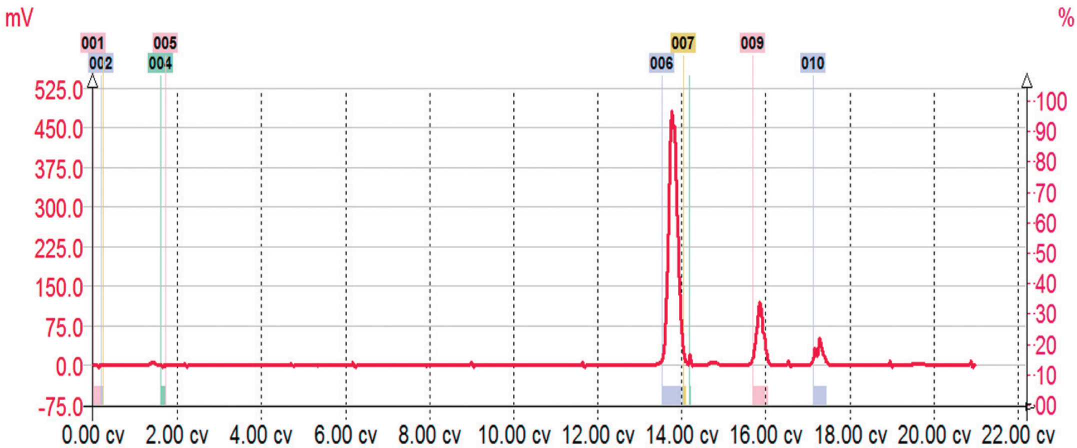
Purification

Sample: Crude 100mg
Column: PF-15SIHP-F0040
Instrument: puriFlash® 450-iELSD
Injection mode: Solid deposit with celite (Dry-load F0004)
Flow rate: 26mL/min
Solvents: A-Hexane, B-CH_2Cl_2

Elution conditions:

CV	%A	%B
0	97	3
1	97	3
16	40	60
21	40	60

Detection: ELSD with Automatic gain (SAGA)



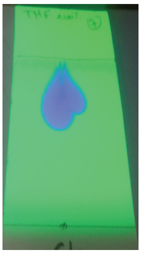
interchim®

Purification of 7 Liquid Cristals

TLC method development

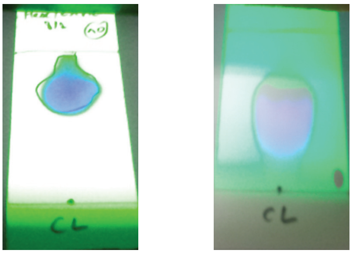
Mobile phase:

90% DCM / MeOH 10%



Customer TLC

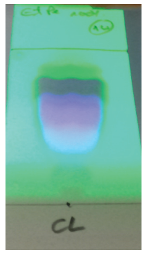
80% Hex / AcOEt 20% — 100% Hexane



Interchim® development

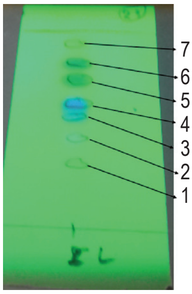
Adaptation of TLC Conditions to get the best condition

100% Petroleum Ether



Dilution of the sample by 100 and 5µL put on the plate

100% Petroleum Ether

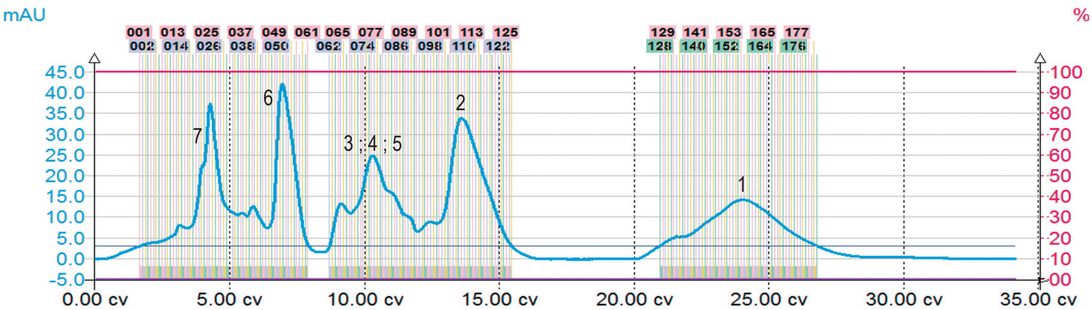


Compound	Rf	CV
7	0.938	1.067
	$\Delta CV_{6\text{-}7} = 0.123$	
6	0.841	1.189
	$\Delta CV_{5\text{-}6} = 0.124$	
5	0.761	1.313
	$\Delta CV_{4\text{-}5} = 0.258$	
4	0.636	1.571
	$\Delta CV_{3\text{-}4} = 0.171$	
3	0.574	1.743
	$\Delta CV_{2\text{-}3} = 0.430$	
2	0.460	2.173
	$\Delta CV_{1\text{-}2} = 0.810$	
1	0.335	2.983

Purification

Sample: Crude 150mg
Column: PF-15SIHP-F0040
Instrument: puriFlash® 430-iELSD
Injection mode: Liquid injection

Flow rate: 30mL/min
Solvent: 100% Petroleum Ether
Elution condition: Isocratic
Detection: Scan UV 200-600nm



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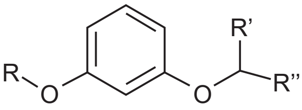
Purification of 2 Enantiomers



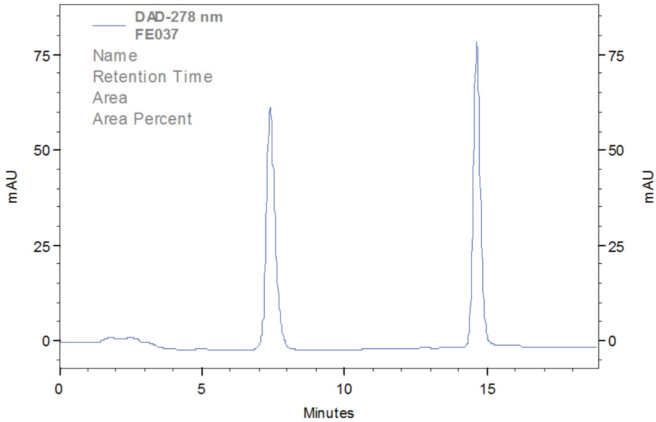
R and S

Analytical conditions

HPLC Column: Chiracel OD-H 250x4.6mm 5µm
Injection mode: Liquid injection
Injection volume: 10µL
Flow rate: 1.0mL/min
Solvents: A- Hexane / B- Isopropanol
Elution conditions:

t (min)	%A	%B
0	100	0
5	95	5
10	80	20
15	80	20
20	95	5

Detection: UV 278nm



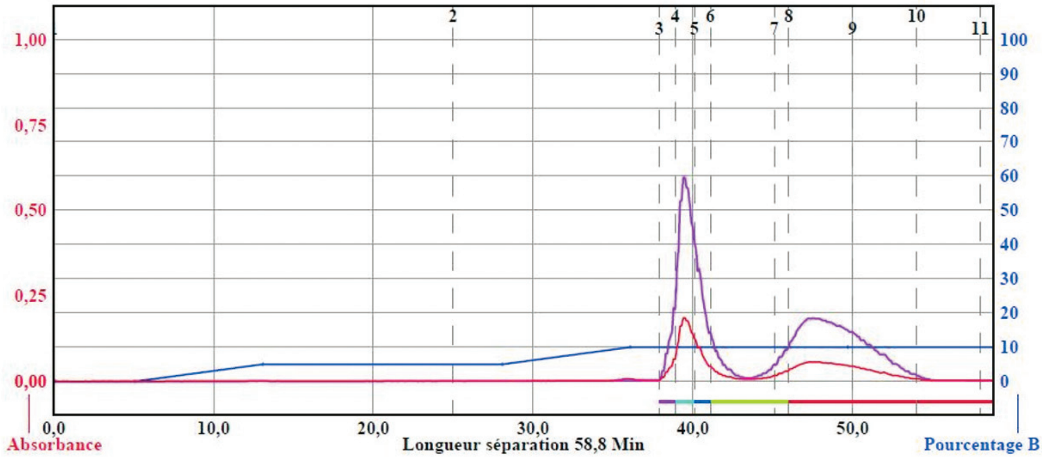
Purification

Sample: Crude 40mg
Column: CT-20OD-I-F0004
Injection mode: Liquid injection
Flow rate: 1mL/min
Solvents: A- Hexane / B- Isopropanol

Elution conditions:

t (min)	%A	%B
0	100	0
5	100	0
13	95	5
28	95	5
36	90	10
49	90	10
59	90	10

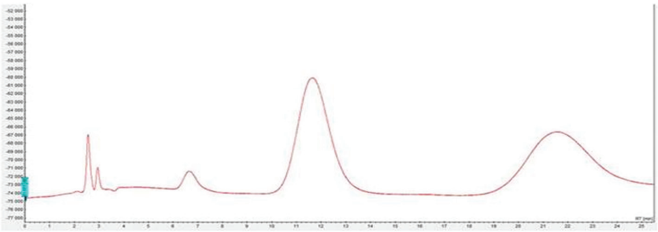
Pressure: 4bar



Purification of 2 Enantiomers

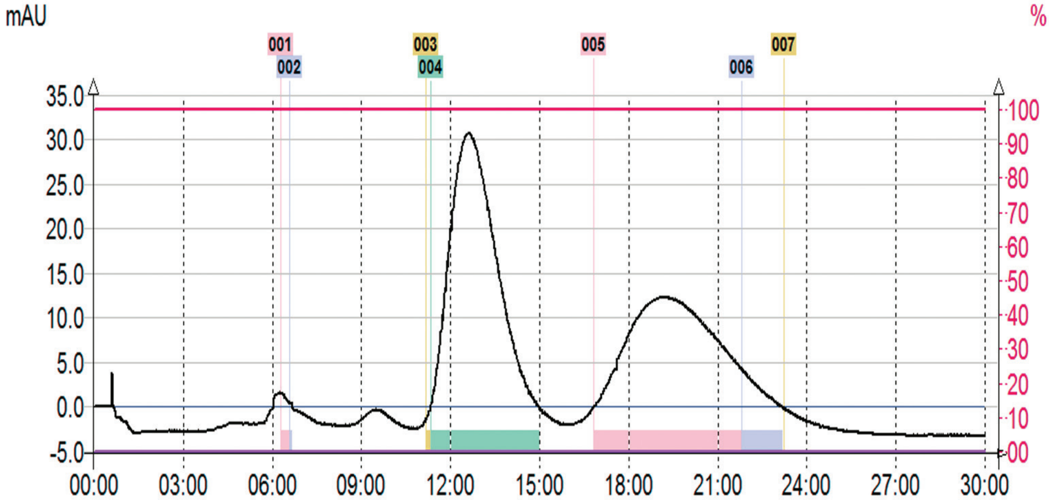
Analytical conditions

HPLC Column: CHIRALPAK IA 5µm 250X4.6mm
Injection mode: Liquid injection
Injection volume: 10µL
Flow rate: 1mL/min
Solvents: 80% Hexane / 20% Isopropanol
Elution condition: Isocratic
Detection: UV 220nm



Purification

Sample: Crude 10mg
Column: CT-20IA-F0025
Instrument: puriFlash®450 - Integrated ELSD
Injection mode: Liquid injection
Injection volume: 250µL
Flow rate: 5mL/min
Solvents: 80% Hexane / 20% Isopropanol
Elution condition: Isocratic
Detection: UV 220nm
Pressure: 2bar



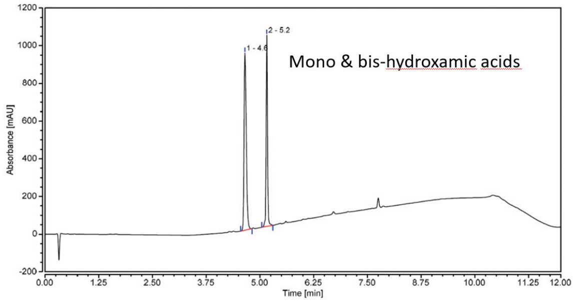
Purification of Hydroxamic Acids

Analytical conditions

HPLC Column: Kinetex (Core-Shell) C18 50x2.1mm 2.6µm
Injection mode: Liquid injection 5µL (concentration: 1mg/mL)
Flow rate: 1mL/min
Solvents: 80% Hexane / 20% Isopropanol
Elution conditions:

t (min)	%A	%B
0	100	0
2	100	0
7	0	100

Detection: UV 220nm

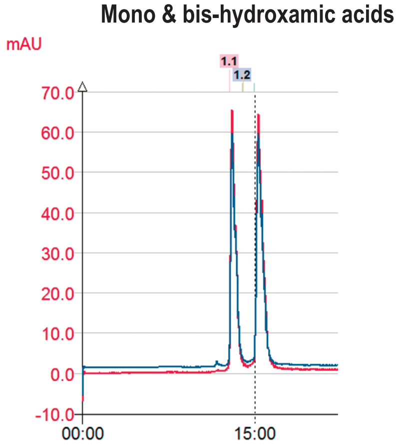


Purification

Sample: Crude 0.9mg
Column: PF-15C18AQ-F0025
Instrument: puriFlash® XS 420Plus
Injection mode: Liquid injection 900µL (concentration: 1mg/mL)
Flow rate: 15mL/min
Solvents: A- Water / B- ACN
Elution conditions:

t (min)	%A	%B
0	100	0
30	50	50
35	50	50

Detection: UV 220nm, Scan UV 210-400nm, ELSD 45°C (red curve)

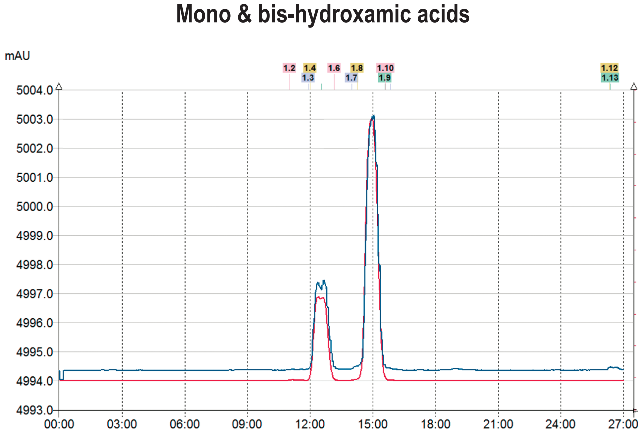


Overload

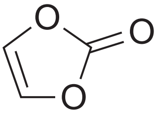
Sample: Crude 45mg
Column: PF-15C18AQ-F0025
Instrument: puriFlash® XS 420Plus
Injection mode: Liquid injection 2mL
Flow rate: 26mL/min
Solvents:
A-Heptane, B-HTBE
Elution conditions:

t (min)	%A	%B
0	100	0
22:08	63	37
27	0	100

Detection: UV 220nm, Scan UV 210-400nm, ELSD 45°C (red curve)



Purification of Dioxol

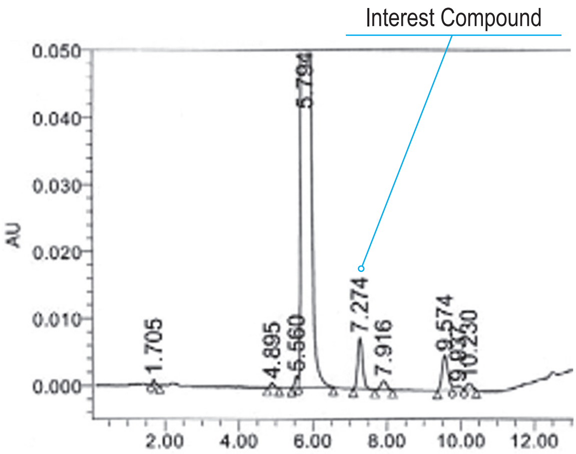


Analytical conditions

HPLC Column: C18 250x4,6mm 5µm
Injection mode: Liquid injection
Injection volume: 10µL
Flow rate: 1.0mL/min
Solvents: A-Water, B-Acetonitrile
Elution conditions:

t (min)	%A	%B
0	50	50
8	50	50
11	20	80
17	20	80
20	50	50
30	50	50

Detection: UV 210nm



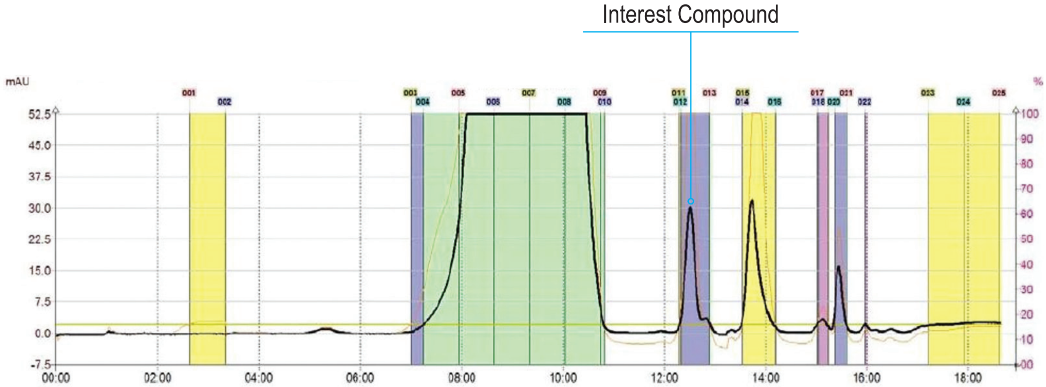
Purification

Column: PF-15C18HP-F0040
Instrument: puriFlash® 450
Injection mode: Liquid injection
Injection volume: 215µL
Flow rate: 35mL/min
Solvents: A-Water, B-Acetonitrile

Elution conditions:

t (min)	%A	%B
0	70	30
8:12	70	30
13:34	15	85
18:40	15	85
23	70	30

Detections: UV 210nm, Scan UV 210-600nm
Pressure: 11bar



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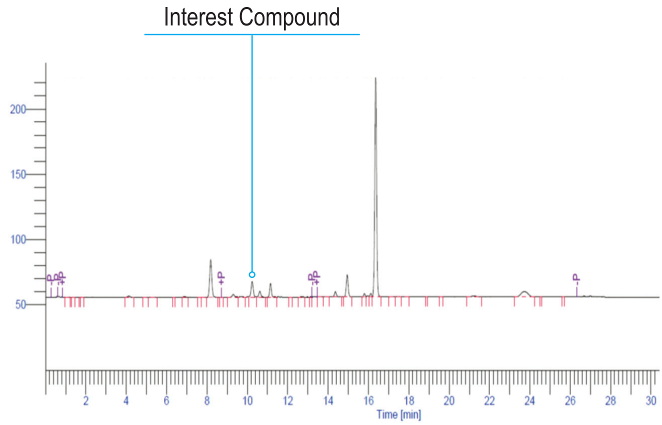
Purification of Pharmaceutical

Analytical conditions

HPLC Column: Uptisphere® Strategy™ C18 HQ 100x4.6mm 5µm
Injection mode: Liquid injection
Injection volume: 10µl - 0.03mg of product
Flow rate: 2mL/min
Solvents: A- Water / B- ACN
Elution conditions:

t (min)	%A	%B
0	50	50
3	50	50
15	0	100
25	0	100
27	50	50
35	50	50

Detection: UV 277nm

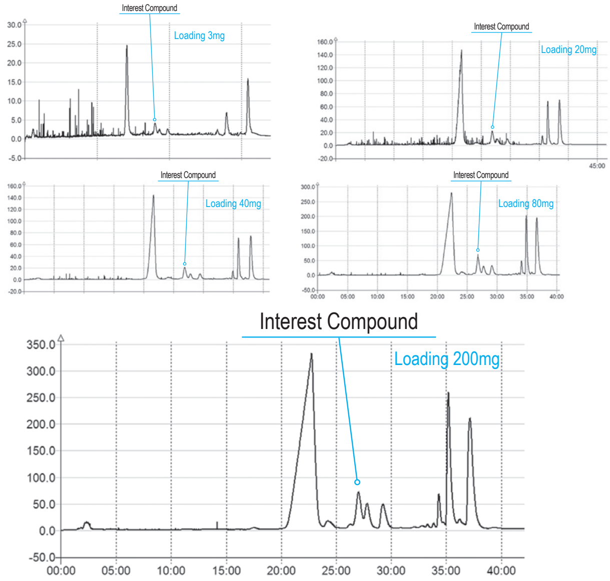


Purification

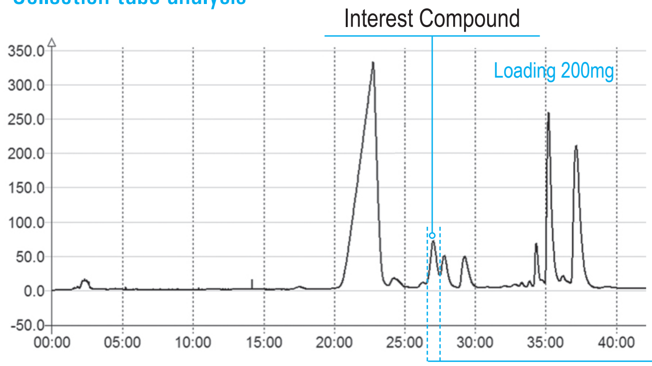
Sample: Crude 3mg up to 200mg of product
Prep Column: Uptisphere® Strategy™ C18 HQ 150x21.2mm 10µm
Instrument: puriFlash® 4250
Injection mode: Liquid injection
Flow rate: 27mL/min
Solvents: A- Water / B- ACN
Elution conditions:

t (min)	%A	%B
0	50	50
7	50	50
45	0	100
65	0	100
81	50	50

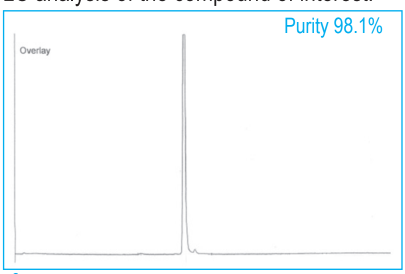
Detection: UV 277nm



Collection tube analysis



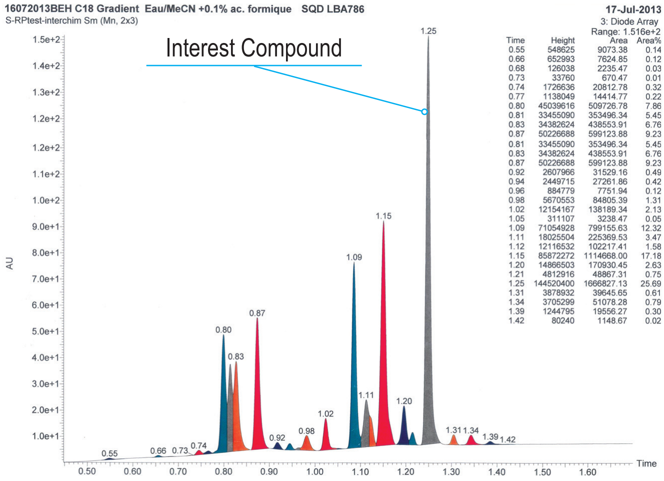
LC analysis of the compound of interest:



Purification of Pharmaceutical

Analytical conditions

HPLC Column: Waters Acquity BEH C18 250x4.6mm 1.7µm
Injection mode: Liquid injection
Injection volume: 10µl
Flow rate: 1mL/min
Elution condition: 40%Water/60%Acetonitrile (0.1% Formic acid)
Detection: UV 315nm



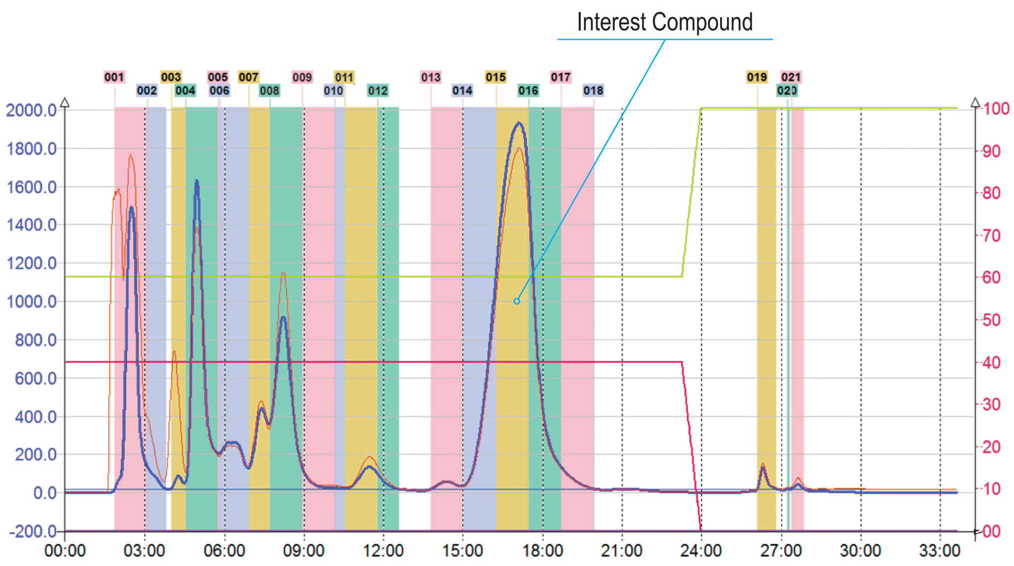
Purification

Sample: Crude 100mg
Column: PF-15C18HP-150/212
Instrument: puriFlash® 4250
Injection mode: Liquid injection
Flow rate: 20mL/min
Solvents: A- Water / B- ACN (0.1% Formic acid)

Elution conditions:

t (min)	%A	%B
0	40	60
23	40	60
24	0	100
29	0	100
24	0	100

Detection: UV 315nm
Pressure: 7bar



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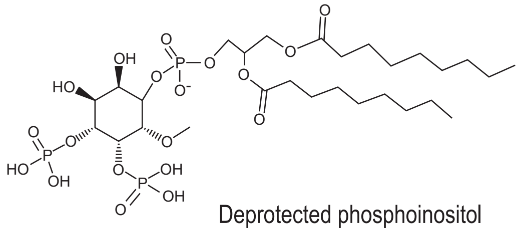
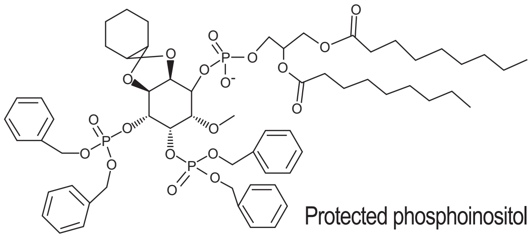
Purification of Phosphoinositol



Deprotected phosphoinositol



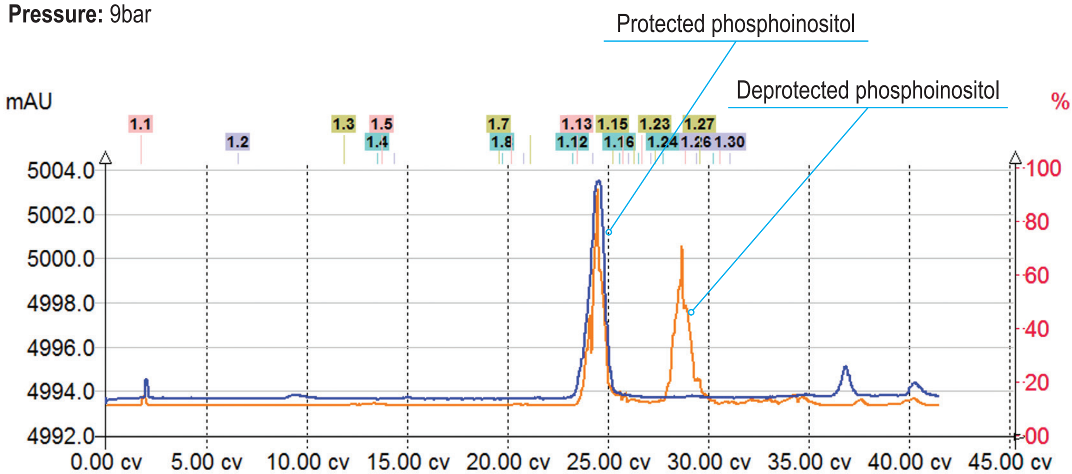
Protected phosphoinositol

Purification

Sample: Crude 20mg
Column: PF-15C18AQ-F0004
Instrument: puriFlash®4250 - iELSD
Injection mode: Liquid injection
Flow rate: 5mL/min
Solvents: A- Water / B- Methanol
Elution conditions:

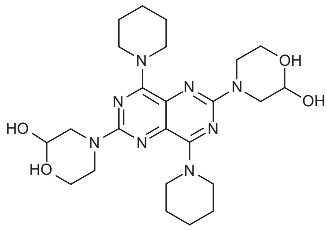
t (min)	%A	%B
0	100	0
30	0	100

Detection: UV 280nm (blue), ELSD (35°C, automatic gain, orange)
Pressure: 9bar



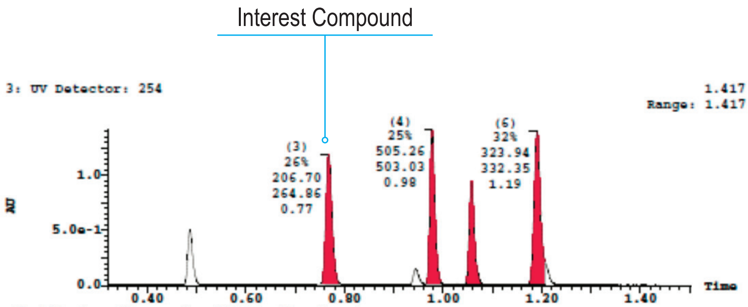
The deprotected phosphoinositol has been detected only by the iELSD.

Purification of Dipyridamole



Analytical conditions

HPLC Column: Waters C18 1.7µm
Injection mode: Liquid injection
Solvents: A-Water 10% with NH_3 / B-Acetonitrile 90%
Detection: UV 254nm

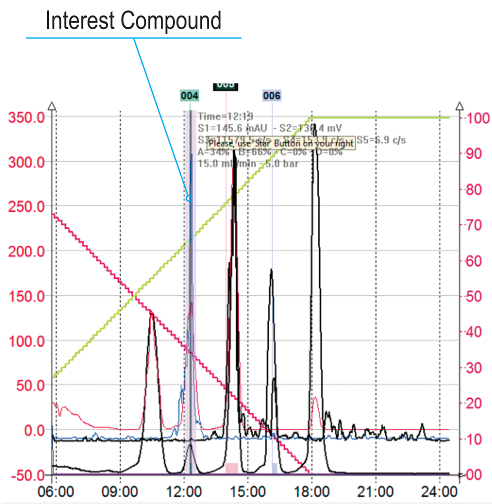


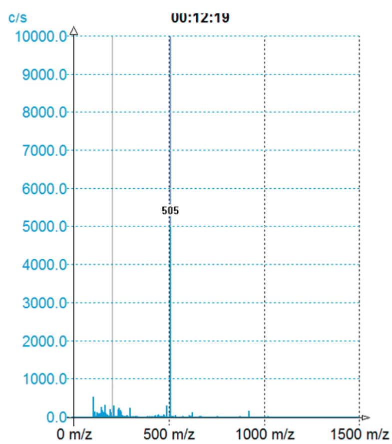
Peak Number	Time	Area %Total	Mass Found
3	0.77	25.53	
4	0.98	24.90	
5	1.06	17.52	
6	1.19	32.05	

Purification

Column: PF-15C18XS-F0025
Instrument: puriFlash® 4250
Injection mode: Liquid injection
Injection volume: 1mL
Flow rate: 15mL/min

Solvents: A-Water 10% with NH3 / B-Acetonitrile
Detection: UV 254nm (blue), ELSD (35°C, gain 4) (red), MS (APCI): XIC (m/z 505) (black)





Tel.: +33 4 70 03 88 55 | Hotline: +33 4 70 03 73 01 | E-mail: interfine@interchim.fr | Fax: +33 4 70 03 82 60 | WWW.INTERCHIM.COM

Purification of Peptides Mixture

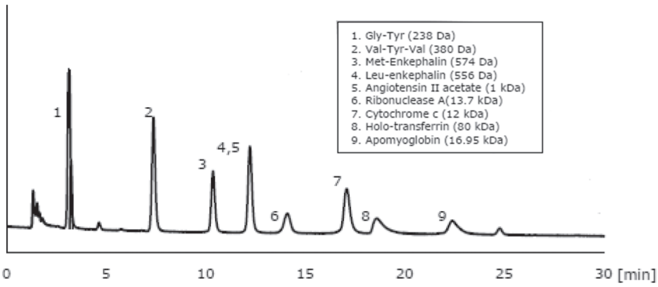
Compounds
GLY-TYR (MW: 238g.mol^{-1})
VAL-TYR-VAL (MW: 380g.mol^{-1})
Met-Enkephalin (MW: 574g.mol^{-1})
Angiotensin II (MW: 1000g.mol^{-1})
Cytochrome C (MW: 11749g.mol^{-1})

Analytical conditions

HPLC Column: PF-15C18N-250/046
Injection mode: Liquid injection
Injection volume: 10µL
Flow rate: 2mL/min
Solvents: A- Water + 0,1% TFA / B-Acetonitrile + 0,1% TFA
Elution conditions:

t (min)	%A	%B
0	95	5
30	60	40

Detection: UV 215nm

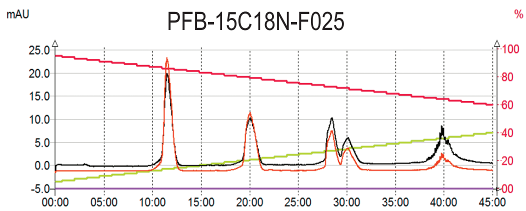


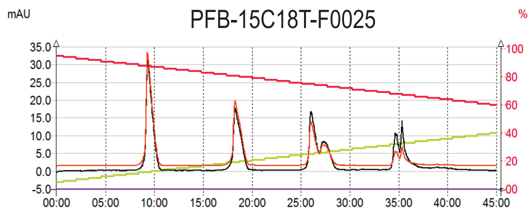
Purification

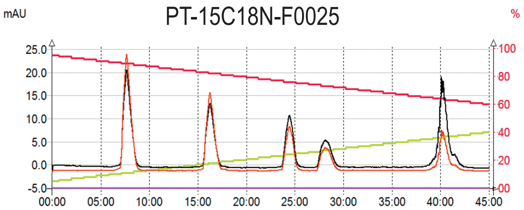
Sample: Crude 1.8mg
Column: PFB-15C18N-F0025, PFB-15C18T-F0025, PT-15C18N-F0025, PT-15C18T-F0025
Instrument: puriFlash® XS 420Plus
Injection mode: Liquid injection
Injection volume: 150µL
Flow rate: 15mL/min
Solvents: A-Water + 0,1% TFA / B- Acetonitrile + 0,1%TFA
Elution conditions:

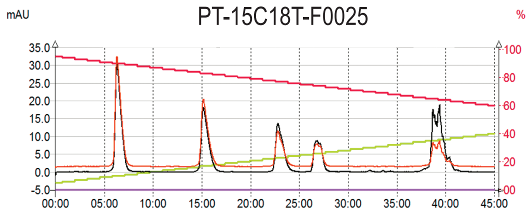
t (min)	%A	%B
0	95	5
45	60	40

Detection: UV 254nm (Black), UV 280 (Orange)
Pressure: 7bar





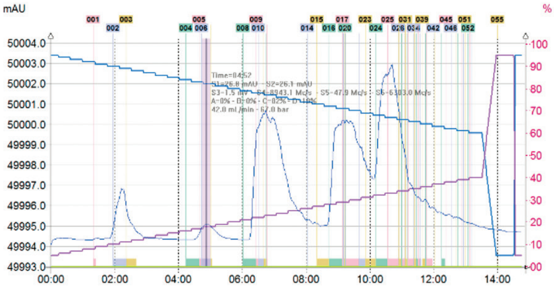
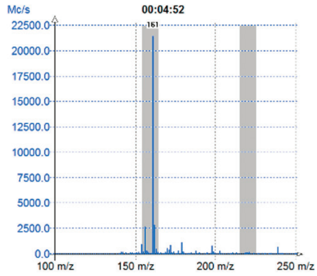


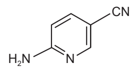


Purification of Pyridines

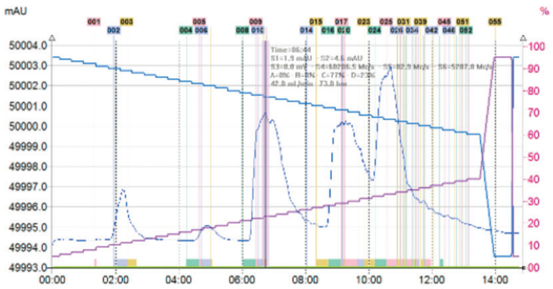
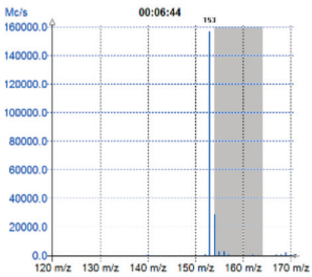
Purification

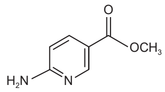
HPLC column: Waters X-bridge 30x100mm 5µm
Instrument: puriFlash® 4250-MS
Injection mode: Liquid injection
Solvents: A- CH_3CN+NH_4OH / B-Water
Detection: TIC & XIC (m/z 151-153, 158-160, 219-221)

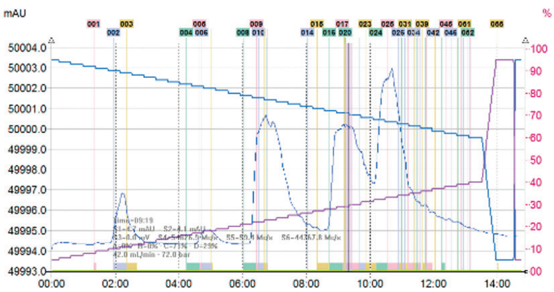
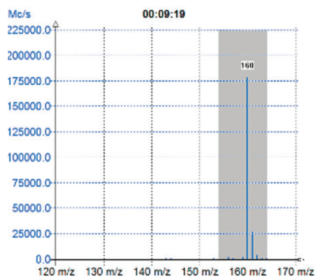



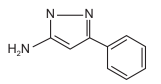


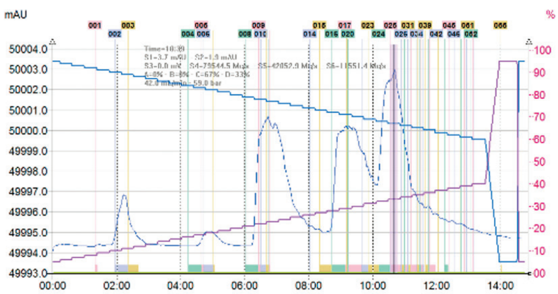
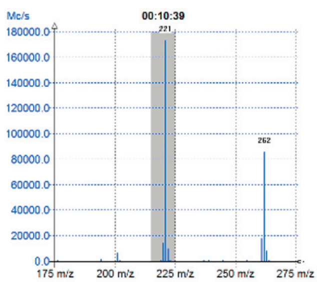
+ CH_3CN

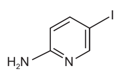







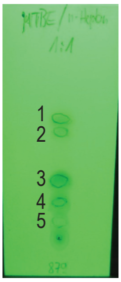





Method Development & Overload

TLC method development

Mobile phase:
50% HTBE / Heptane 50%

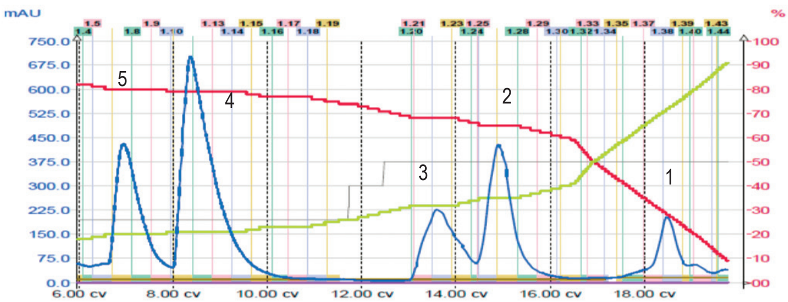


Compound	Rf	CV
1	0.09	11.11
2	0.20	5.00
3	0.33	3.03
4	0.60	1.67
5	0.68	1.47

Critical compounds to separate are 4 and 5 ∆CV=0.20.

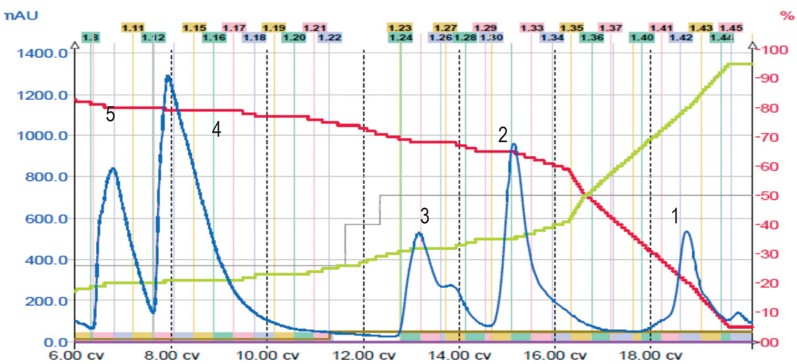
Purification

Sample: Crude 100mg
Column: PF-15SIHP-F0040
Instrument:
puriFlash® XS-420Plus
Injection mode:
Solid deposit with celite
(Dry-load F0004)
Flow rate: 26mL/min
Solvents:
A-Heptane, B-HTBE
Elution conditions:
Method based on 16 CV up to TLC condition
Detection: ELSD with Automatic gain (SAGA)



Overload

Sample: Crude 700mg
Column: PF-15SIHP-F0040
Instrument:
puriFlash® XS-420Plus
Injection mode:
Solid deposit with celite
(Dry-load F0004)
Flow rate: 26mL/min
Solvents:
A-Heptane, B-HTBE
Elution conditions:
Method based on 16 CV up to TLC condition
Detection: UV 254nm



interchim®

Publications

1- Mass spectrometry guided purification for efficient isolation of natural products at semi-and preparative scale

A Azzollini, EQ Ferreira, N Bohni, D Guillarme… - Planta Medica - thieme-connect.com

... In particular, a single quadrupole mass spectrometer coupled to a semi-preparative chromatographic system (PuriFlash® – MS) was found a promising tool to increase the efficiency of the isolation of constituents of interest. ...

2- Optimized MS-based isolation strategy for rapid targeted purification of antifungal compounds

A Azzollini, J Zhang, Q Favre-Godal… - Planta Medica - thieme-connect.com

... In particular, a single quadrupole mass spectrometer coupled to a semi-preparative chromatographic system (PuriFlash® – MS) was found a promising tool to increase the efficiency of the isolation of constituents of interest. ...

3- A Comprehensive Review for the Learners and Users: Preparative High Performance Liquid Chromatography

BG Jadhav, AM Jadhav, AR Shirode… - International Journal of …, 2014 - pmindexing.com

... 3.3 Preparative high pressure liquid chromatography-flash chromatography (PuriFlash®). The commercially available instrument puriFlash® (Interchim laboratory suppliers) combines the simplicity of Flash ... reverse phase in less than 10 seconds. The puriFlash software ...

4- CHIMIA Report/Company News

B Easy - chimia.ch

... If you routinely purify more than a couple of grams of compound our PuriFlash® development scale cartridges will save you both time and money. ... PuriFlash™ PuriFlash F development flash cartridges are excellent cartridges for use with com- pression module systems. ...

5- An antedrug of the CXCL12 neutraligand blocks experimental allergic asthma without systemic effect in mice

F Daubeuf, M Hachet-Haas, P Gizzi, V Gasparik… - Journal of Biological …, 2013 - ASBMB

... Thin-layer chromatography was performed on silica gel 60F 254 plates. Flash chromatography was performed on silica gel (puriFlash® 30µm, Interchim®) or C18 (puriFlash® 30µm, Interchim) prepacked columns on a SpotII Ultima from Armen. ...

6- Fluorogenic substrates, methods of making the substrates, and methods of detecting glycosidase activities

A Drevelle, S Ladame, M Najah… - US Patent App. 14/ …, 2014 - Google Patents

... The obtained solid is purified once by reverse phase chromatography on a pre-packed silica column (eluent: pure water, cartridge PURIFLASH® INTERCHROM C18) and then subsequently with a purification apparatus BIOTAGE-ISOLERAONE (eluent: pure water, cartridge ...

7- Sulfonated coumarins, their synthesis, fluorogenic substrates resulting from grafting of these coumarins on sugars, method for obtaining these substrates, and their …

A Drevelle, S Ladame, M Najah, E Mayot - US Patent 8,716,496, 2014 - Google Patents

... The obtained solid is purified once by reverse phase chromatography on a pre-packed silica column (eluent: pure water, cartridge PURIFLASH® INTERCHROM C18) and then subsequently with a purification apparatus BIOTAGE-ISOLERAONE (eluent: pure water, cartridge ...

8- ПЕПТИДНЫЕ ИНГИБИТОРЫ АГРЕГАЦИИ ТРОМБОЦИТОВ

АЮ Лизунов, ЕА Батуев, ЛА Павлова - 2013 - scientific-notes.ru

... препаративного жидкостного хроматографа PuriFlash 450 (InterChim). Условия ВЭЖХ: катридж Interchim PF-C18 (20g), 15 мкм. ... Очистку пептидов осуществляли с помощью высокоэффективного препаративного жидкостного хроматогрофа PuriFlash 450 (InterChim). ...

9- HPLC-based activity profiling for antiplasmodial activity in the traditional Indonesian medicinal plant Carica papaya L.

T Julianti, M De Mieri, S Zimmermann… - Journal of …, 2014 - Elsevier

... Semipreparative separations of alkaloids 5–8 were carried out with a PuriFlash® 4100 system consisting of mixing HPLC pump, UV detector dual length DAD, fraction collector, and a sample loading module (Interchim; Montluçon, French). ...

10- Advanced glycation inhibition and protection against endothelial dysfunction induced by coumarins and procyanidins from Mammea neurophylla

BT Dang, C Gény, P Blanchard, C Rouger, P Tonnerre… - Fitoterapia, 2014 - Elsevier

... The samples were adsorbed to silica gel Si60 prior to introduction and a DASi™ sample injection module (Agilent Technologies) was used. For MeOH bark extract, Puriflash® PF-30SiHP/4G cartridges (Interchim, Clichy, France) were used and the flow rate was 5 mL/min [64]. ...

11- Development of a simple recycling process for evaporated organic solvent after preparative supercritical fluid chromatography using powdered activated charcoal

SB Thomas, WW Barnhart, HA Eastwood, C Nichols… - RSC Advances, 2014 - pubs.rsc.org

... PA). XBridge™ C-18 (100 × 3.0 mm id, 3.5 µm) and puriFlash® Dry-load empty 200G flash (133 × 60 mm id) columns were purchased from Waters Corporation (Milford, MA) and Interchim (San Pedro, CA), respectively. Hydrophobic ...

12- A selective lead sensor based on a fluorescent molecular probe grafted on a PDMS microfluidic chip

D Faye, JP Lefevre, JA Delaire, I Leray - Journal of Photochemistry and …, 2012 - Elsevier

... Mass spectra were performed at IMAGIF Institute (Gif sur Yvette, France). Column chromatographies were performed using puriFlash® (Interchim) or Spot 2 Flash System (ARMEN) with prepacked column Sepra Si 50-60 Å. ...

13- Highly Efficient Synthesis of Globular (Bola) amphiphilic [5: 1] Hexakisadducts of C60

F Hörmann, M Brettreich, W Donaubauer… - … -A European Journal, 2013 - Wiley Online Library

... 254 . Detection: UV lamp or KMnO 4 chamber. Flash chromatography (FC): Interchim puriFlash 430. PuriFlash Column 15 Silica HP-Silica 15 µ (80.0 g). UV/Vis spectroscopy: Varian Cary 5000 UV-Vis-NIR spectrophotometer. ...

Publications

14- Efficient Synthesis of C2v-Symmetrical Pentakisadducts of C60 as Versatile Building Blocks for Fullerene Architectures that Involve a Mixed Octahedral Addition ...

F Hörmann, W Donaubauer, F Hampel… - Chemistry-A European …, 2012 - Wiley Online Library

... 254 . Detection: UV lamp or iodine chamber. Flash chromatography (FC): Interchim puriFlash 430. PuriFlash Column 15 silica HP-silica 15 µ (80.0 g). UV/Vis spectroscopy: Varian Cary 5000 UV/Vis-NIR spectrophotometer. The ...

15- Giant Fullerene Polyelectrolytes Composed of C60 Building Blocks with an Octahedral Addition Pattern and Discovery of a New Cyclopropanation Reaction Involving ...

F Hörmann, A Hirsch - Chemistry-A European Journal, 2013 - Wiley Online Library

... All analytical reagent-grade solvents were purified by distillation. Thin layer chromatography (TLC): Merck HPTLC silica gel 60 F 254 . Detection: UV lamp or KMnO 4 chamber. Flash chromatography (FC): Interchim puriFlash 430. PuriFlash Column 15 Silica HP-Silica 15 µ. ...

16- Secondary metabolites from aerial parts of Circaea lutetiana L

S Granica, AK Kiss - Biochemical Systematics and Ecology, 2013 - Elsevier

... Fraction Z 10 (534 mg) was subjected to flash chromatography system (PuriFlash 430evo, Interchim, France, C18 column – 15 µm, 75 × 30 mm, 20 g, Interchim, France, λ = 254 nm, flow 10 mL/min, mobile phase: 0.1% HCOOH in water (A) and acetonitrile (B); elution program: 0 ...

17- Coordination controlled atropoisomerism in phenanthroline-strapped porphyrins: A swinging affair

P Vorburger, JA Wytko, J Weiss - Journal of Porphyrins and …, 2014 - World Scientific

... Column chromatography was performed with alumina or silica gel from Merck (aluminium oxide 60 standardized; silica gel 60, 0.063–0.200 nm). Flash chromatography was performed using Puriflash Minibox with puriflash column 50 silica HP. ...

18- Sequential photo-addition of glycine methyl-ester to [60] fullerene

R Skanji, M Ben Messaouda, Y Zhang, M Abderrabba… - Tetrahedron, 2012 - Elsevier

... The purification of C 60 -GME mono-adduct was performed on a PuriFlash 430 Evo system (Interchim, Montluçon, France) with a 50 STD (200 g) Puriflash column and a mixture of toluene/acetonitrile (30/70, v/v) as a mobile phase (flow rate 20 mL/min at 20 °C). After discarding ...

19- Comprehensive analysis of Cirsium spinosissimum Scop., a wild alpine food plant

C Abbet, I Slacanin, E Corradi, M De Mieri… - Food chemistry, 2014 - Elsevier

... Preparative HPLC was performed on a PuriFlash® 4100 system (Interchim, Montluçon, France) coupled to an evaporative light scattering detector (ELSD) Series 2000 (Alltech, Deerfield Il, USA, nitrogen flow 2.4 l/min, impactor on, 50 °C) via a Quick Split flow splitter (Interchim ...

20- Conjugation of keto fatty acids to glutathione in plant tissues. Characterization and quantification by HPLC-tandem mass spectrometry

C Abbet, I Slacanin, E Corradi, M De Mieri… - Food chemistry, 2014 - Elsevier

... The solution was then loaded onto a C 18 solid-phase extraction column (Puriflash 60 C 18 U40/63, Interchim, Montluçon, France) preconditioned with 20 mM sodium borate at pH 4. The column was washed with water, and the conjugates were eluted with 40 or 60% acetonitrile ...

21- Identification of a New Lactone Contributing to Overripe Orange Aroma in Bordeaux Dessert Wines via Perceptual Interaction Phenomena

P Stamatopoulos, E Frérot, S Tempère… - Journal of agricultural …, 2014 - ACS Publications

... concentrated. After purification by flash chromatography over silica gel, using a PuriFlash SI Std IR-50SI (50 µm) cartridge from Interchim (Montluçon, France), 2.6g (23%) of 2-nonen-4-olide was obtained (purity > 99%). The ...

22- Antitrypanosomal isoflavan quinones from Abrus precatorius

Y Hata, SN Ebrahimi, M De Mieri, S Zimmermann… - Fitoterapia, 2014 - Elsevier

... Data acquisition and processing were done by using HyStar 3.0 software (Bruker Daltonics). Flash chromatography was carried out with a PuriFlash® 4100 chromatography system (Interchim) controlled by InterSoft V5.0 software. ...

23- Quantitative analysis of phenolic metabolites from different parts of Angelica keiskei by HPLC–ESI MS/MS and their xanthine oxidase inhibition

DW Kim, MJ Curtis-Long, HJ Yuk, Y Wang, YH Song… - Food chemistry, 2014 - Elsevier

... The dried root bark (1.5 kg) of A. keiskei was extracted using methanol (3 × 5 l) at room temperature to give crude extract (43.5 g). Crude extract (8 g) was purified by MPLC (PuriFlash 450, Interchim, France) over reversed phase silica gel (20–40 µm, 250 g) and eluted by using ...

24- Секция № 5 Современные проблемы фармакологии, клинической фармакологии и фармации

А ДЕЙСТВИЕМ - bakob.ru

... использованием стратегии FastMoc 0.25. Очистку пептидов осуществляли с помощью высокоэффективного препаративного жидкостного хроматографа PuriFlash 450 (InterChim). Строение синтезированных соединений ...

25- ПРОБЛЕМЫ ФАРМАЦИИ И ФАРМАКОЛОГИИ ГЛИКОПРОТЕИНОВЫЕ Gp IIB/IIIA РЕЦЕПТОРЫ ТРОМБОЦИТОВ–ПОТЕНЦИАЛЬНАЯ МИШЕНЬ ДЛЯ ...

АА Алексеев, ВЛ Королев, ЛА Павлова - БЮЛЛЕТЕНЬ СЕВЕРНОГО … - nsmu.ru

... использованием стратегии FastMoc 0.25. Очистку пептидов осуществляли с помощью высокоэффективного препаративного жидкостного хро- матогрофа PuriFlash 450 (InterChim). Структура полученных соединений ...

26- Chemo-enzymatic preparation of new bio-based bis-and trisphenols: new versatile building blocks for polymer chemistry

F Pion, AF Reano, PH Ducrot, F Allais - RSC Advances, 2013 - pubs.rsc.org

... and were used as received. Dichloromethane was distilled under argon over CaH 2 . Compounds were purified on a Puriflash 430 purchased from Interchim, using Si–OH phase columns. Melting points were measured with a Büchi 510. ...

27- A Fluorescence Anisotropy–Based Myt1 Kinase Binding Assay

A Rohe, C Henze, F Erdmann… - Assay and drug …, 2014 - online.liebertpub.com

... residual solvent signals and reported in ppm (δ). Chromatography was performed on silica gel (Merck silica gel 60, 40–63 mesh) by MPLC (Interchim PuriFlash 430; Montluçon, France). As inprocess control, TLC was carried out ...

Publications

28- Renewable polymers derived from ferulic acid and biobased diols via ADMET

I Barbara, AL Flourat, F Allais - European Polymer Journal, 2014 - Elsevier

... Evaporations were conducted under reduced pressure at temperature below 40 °C. Column chromatography was carried out with an automated flash chromatography (PuriFlash 4100, Interchim) and pre-packed INTERCHIM PF-30SI-HP (30 µm silica gel) columns. ...

29- In vitro digestion of citric acid esters of mono-and diglycerides (CITREM) and CITREM-containing infant formula/emulsions

S Amara, A Patin, F Giuffrida, TJ Wooster… - Food & function, 2014 - pubs.rsc.org

... lipases on these compounds. CITREM (504 mg) was fractionated by column chromatography (SiO 2) with the puriflash system using petroleum benzine and ether (+1% HCO 2 H) as the eluent from 60% to 100%. Fractions 1 to ...

30- Design, Synthesis, and Initial Evaluation of a High Affinity Positron Emission Tomography Probe for Imaging Matrix Metalloproteinases 2 and 9

SV Selivanova, T Stellfeld, TK Heinrich… - Journal of medicinal …, 2013 - ACS Publications

... The acetonitrile gradient from 5% to 95% over 20 min at 30 mL/min flow rate was applied. Ion exchange was performed on Biotage Isolera using RP-18 PuriFlash 15PT C18T cartridges (Interchim) and the mobile phase as described below (see: Introduction of Counterions). ...

31- Bicyclo-ketones as perfuming ingredients

AA Birkbeck - US Patent 8,445,727, 2013 - Google Patents

... yellow oil. Further purification by chromatography Puriflash cartridge (Si-HP 80G) with cyclohexane:ethyl acetate (99:1) as eluent in which only pure fractions were combined gave the pure ketone 0.7 g as a colorless oil. 13 C ...

32- Bioassay-Guided Chromatographic Isolation and Identification of Antibacterial Compounds from Artemisia annua L. That Inhibit Clostridium perfringens Growth

E Ivarsen, XC Fretté, KB Christensen… - Journal of AOAC …, 2014 - ingentaconnect.com

... The used chromatographic system was a silica gel normal phase (NP) column (Puriflash, Si-HP, 50 µm, 80 g, Interchim, Montluçon, France). Fractionation of the crude n-hexane and the DCM extracts was performed in duplicate. ...

33- Papain-Like Protease (PLpro) Inhibitory Effects of Cinnamic Amides from Tribulus terrestris Fruits

YH Song, DW Kim, MJ Curtis-Long, HJ Yuk… - Biological and …, 2014 - jlc.jst.go.jp

... C18) using MPLC (Puriflash 450, Interchim, Montlucon, France) with a linear gradient of 0–90% CH3OH/H2O and a 40 mL/min flow rate to afford seven fractions (A–G). Frac- tions C (1.3 g), E (2.8 g) and F (1.2 g) were grouped together and fractionated via MPLC using a silica ...

34- Chemoenzymatic Total Synthesis of a Naturally Occurring (5-5')/(8'-O-4 ") Dehydrotrimer of Ferulic Acid

LMM Mouterde, AL Flourat… - European Journal of …, 2013 - Wiley Online Library

... 35 °C unless otherwise noted. Column chromatography (CC) was carried out with an automated flash chromatography PuriFlash system and pre-packed INTERCHIM PF-30SI-HP (30 µm silica gel) columns. 1 H NMR spectra ...

35- Chrolactomycins from the Actinomycete Actinospica

M Iorio, SI Maffioli, E Gaspari, R Rossi… - Journal of natural …, 2012 - ACS Publications

... The latter (580 mL) was extracted three times with 200 mL of ethyl acetate, and the combined organic phases were dried under reduced pressure and dissolved in 4 mL of 50% dimethylformamide in H 2 O (v/v). The sample was resolved on a 20 g reversed-phase Puriflash ...

36- Microbiologically active Mannich bases derived from 1, 2, 4-triazoles. The effect of C-5 substituent on antibacterial activity

T Plech, M Wujec, M Majewska, U Kosikowska… - Medicinal Chemistry …, 2013 - Springer

... Elemental analyses were performed on an AMZ 851 CHX analyzer (PG, Gdansk, Poland) and the results were within ±0.2 % of the theoretical value. All the compounds were purified by flash chromatography (PuriFlash 430evo, Interchim, USA). ...

37- Conjugates of pyrrolo [1, 4] benzodiazepine dimers as anticancer agents

A Commercon, L Gauzy-Lazo - US Patent 8,481,042, 2013 - Google Patents

The present invention relates to pyrrolo[1,4]benzodiazepine (PBD) dimer conjugates, to the compositions comprising them and to their therapeutic application, in particular as anticancer agents. The invention also relates to the process for the preparation of the conjugates, to their ...

38- Novel disubstituted 3, 4-diamino-3-cyclobutene-1, 2-dione compounds for use in the treatment of chemokine-mediated diseases

B Musicki, J Aubert, JG Boiteaux, L Clary… - US Patent App. 14/ …, 2012 - Google Patents

Disubstituted 3,4-diamino-3-cyclobutene-1,2-dione compounds are described that correspond to general formula (I). Also described, are pharmaceutical compositions that include these compounds and methods of using these compounds and compositions for the treatment of ...

39- Conjugates of Pyrrolo [1, 4] Benzodiazepine Dimers As Anticancer Agents

A Commercon, L Gauzy-lazo - US Patent 20,140,155,590, 2014 - freepatentsonline.com

... 1-yl)propanoylamino]ethoxy}ethoxy)ethoxy]ethoxy}propanoate in 50 µl of DMA are added to 3.3mg of diisopropylethylamine supported on resin (3.72 mmol/g). The mixture obtained is stirred at AT for 24 h and then filtered through silica (Interchrom Puriflash Silica 15/35U 2G ...

40- Studies on the synthesis and antibacterial activity of 3, 6-disubstituted 1, 2, 4-triazolo [3, 4- b] 1, 3, 4-thiadiazoles

T Plech, M Wujec, U Kosikowska, A Malm… - European journal of …, 2012 - Elsevier

... value. All the compounds were purified by flash chromatography (PuriFlash 430evo, Interchim, USA). 4.1.2. General procedure for the synthesis of 4-amino-5-substituted-2,4-dihydro-3H-1,2,4-triazole-3-thiones (A–D). Solid potassium ...

41- [C@ c02536

ST Fang, X Liu, NN Kong, SJ Li

... Ltd, Yantai, China), and spots were visualised by spraying with 10% H2SO4 in EtOH followed by heating. Fractions were separated by preparative medium pressure liquid chromatography (MPLC) (Puriflash 450, Interchim Natural Product Research 1967 ...

Publications

42- [C@ 175eb10

ST Fang, X Liu, NN Kong, SJ Liu, CH Xia - 2013 - ir.yic.ac.cn

... Ltd, Yantai, China), and spots were visualised by spraying with 10% H2SO4 in EtOH followed by heating. Fractions were separated by preparative medium pressure liquid chromatography (MPLC) (Puriflash 450, Interchim Natural Product Research 1967 ...

43- Trophic importance of diatoms in an intertidal Zostera noltii seagrass bed: Evidence from stable isotope and fatty acid analyses

B Lebreton, P Richard, R Galois, G Radenac… - Estuarine, Coastal and …, 2011 - Elsevier

... v). FAME purification was done in two steps. First, a Flash-LC was carried out on the HPLC fitted with a semi-preparative column (100 mm length × 10 mm ID) filled with a Puriflash Si-CN 60 µm phase (Interchim, France). A polarity ...

44- Antifungal ether diglycosides from Matayba guianensis Aublet

PA de Assis, PNET Theodoro, JE de Paula… - Bioorganic & medicinal …, 2014 - Elsevier

... Fractions 167–174 (502.9 mg) were pooled and chromatographed on MPLC column (Interchim PuriFlash™ 25 g–22 bars P/N: IR 50 SI/25 g Upti—prep silica technology™ 50 µm), eluted by a gradient of increasing polarity of MeOH in CH 2 Cl 2 at a flux of 15 mL/min to furnish ...

45- Sequential Fullerenylation of Bismalonates–Efficient Access to Oligoclusters with Different Fullerene Building Blocks

LK Wasserthal, A Kratzer… - European Journal of …, 2013 - Wiley Online Library

... TLC: Merck TLC silica gel 60 F 254 , KMnO 4 (1 % solution in 1 % aqueous KOH) was used to develop the plates. Flash chromatography: Interchim puriFlash 430 instrument, SIHC-JP 15 µm 40 g column, substances purified portionwise. ...

46- Two new flavonoid glycosides from the halophyte Limonium franchetii

NN Kong, ST Fang, JH Wang, ZH Wang… - Journal of Asian natural …, 2014 - Taylor & Francis

... heating. Fractions were separated by preparative MPLC (Puriflash 450, Interchim Company, Montlucon, France) on the flash chromatographic columns (Santai Technologies, Inc., Changzhou, China). 3.2 Plant material. The ...

47- Two new withanolides from the halophyte Datura stramonium L.

ST Fang, X Liu, NN Kong, SJ Liu… - Natural product research, 2013 - Taylor & Francis

... Fractions were separated by preparative medium pressure liquid chromatography (MPLC) (Puriflash 450, Interchim Company, France) on the flash chromatographic columns (Santai Technologies, Inc., Changzhou, China). Plant material. ...

48- N-t-butanesulfinyl amide: An optimised and versatile access from readily available starting materials

A Honraedt, G Caillot, E Gras - Comptes Rendus Chimie, 2013 - Elsevier

... The reactions were monitored by TLC using commercially available glass-backed plates, pre-coated with a 0.25 mm layer of silica containing a fluorescent indicator. Flash chromatography was carried out on Interchim Puriflash 430 using Interchim prepacked column (30 µ). ...

49- Synthèse et fonctionnalisation d´aldéhydes issus de la coupure d´esters gras insaturés.

KDEOVL VIVIER, Y POUILLOUX - theses.univ-poitiers.fr

Page 1. THÈSE Pour l´obtention du grade de DOCTEUR DE L´UNIVERSITÉ DE POITIERS UFR des sciences fondamentales et appliquées Institut de chimie des milieux et matériaux de Poitiers - IC2MP (Diplôme National - Arrêté du 7 août 2006) ...

50- Photoinitiated Glycosylation at 350 nm

I Cumpstey, D Crich - Journal of Carbohydrate Chemistry, 2011 - Taylor & Francis

... silica. Plates were visualized with UV light and developed using 10% sulfuric acid. Flash column chromatography was carried out on prepacked silica columns (Chromabond, RediSep, PuriFlash, or SuperFlash). Photochemical ...

51- Supplemental Material to: Ece Cazibe Gaffarogullari, André Krause, Jessica Balbo

DP Herten, A Jäschke - landesbioscience.com

... was performed using self-packed columns of silica gel (60 Å pore size, 130-270 mesh) or on pre-packed cartridges (puriFlash Silica High Capacity 50 µm, Interchim or TELOS Silica flash chromatography columns) on an IntelliFlash 310 chromatography system (Varian). ...

52- Exploration of pipecolate sulfonamides as binders of the FK506-binding proteins 51 and 52

R Gopalakrishnan, C Kozany, Y Wang… - Journal of medicinal …, 2012 - ACS Publications

... Chromatographic separations were performed either by manual flash chromatography or by automated flash chromatography using an Interchim-Puriflash 430 with a UV detector. Extracts were dried over O 4 , and the solvents were removed under reduced pressure. ...

53- Evaluation of synthetic FK506 analogues as ligands for the FK506-binding proteins 51 and 52

R Gopalakrishnan, C Kozany, S Gaali… - Journal of medicinal …, 2012 - ACS Publications

... Experimental Section. Chemistry Chromatographic separations were performed either by manual flash chromatography or by automated flash chromatography using an Interchim Puriflash 430 with an UV detector. Organic phases ...

54- Phytochemistry Letters

Y Hata, M De Mieri, SN Ebrahimi, T Mokoka, G Fouche… - 2014 - Elsevier

... He was used as a carrier gas. Flash chromatography was carried out on a chromatography system PuriFlash® 4100 (Interchim), controlled with InterSoft V5.0 software. Semi-preparative HPLC was per- formed on an Agilent 1100 series instrument equipped with a PDA Fig. ....

55- Improved Synthesis of Cyclic Tertiary Allylic Alcohols by Asymmetric 1, 2-Addition of AlMe3 to Enones

KDEOVL VIVIER, Y POUILLOUX - theses.univ-poitiers.fr

... 0.04–0.063 mm). TLC analysis was carried out on precoated sheets (Merck DC Kieselgel 60 F254). Medium-pressure liquid chromatography (MPLC) was carried out on Interchim puriFlash SI-HP columns. Solvents used for ...

Publications

56- Probing the target-specific inhibition of sensitized protein tyrosine phosphatases with biarsenical probes

A Pomorski, J Adamczyk, A Bishop… - Organic & Biomolecular …, 2014 - pubs.rsc.org

... Page 14. 13 atoms with 1,2-ethanedithiol (EDT). Biarsenical probes were purified by FLASH chromatography using a gradient of ethyl acetate or methanol in toluene (Gilson PLC 2020 using Interchim PuriFlash SIHP 30 µm, 20 g column, see ESI† for details). Fractions with at ...

57- Identification of two new phenathrenones and a saponin as antiprotozoal constituents of Drypetes gerrardii

Y Hata, M De Mieri, SN Ebrahimi, T Mokoka… - Phytochemistry …, 2014 - Elsevier

... He was used as a carrier gas. Flash chromatography was carried out on a chromatography system PuriFlash® 4100 (Interchim), controlled with InterSoft V5.0 software. Semi-preparative HPLC was performed on an Agilent 1100 series instrument equipped with a PDA detector. ...

58- Metabolism of a novel skepinone l-like p38 mitogen-activated protein kinase inhibitor

K Storch, M Gehringer, B Baur, SA Laufer - MedChemComm, 2014 - pubs.rsc.org

... resonance. Flash chromatography was performed using an Interchim PuriFlash 430 automated flash chromatography system with self-packed columns containing Davisil LC60A 20-45 micron silica from Grace Davison. The ..

59- Identification and Quantitation of New Glutamic Acid Derivatives in Soy Sauce by UPLC/MS/MS

E Frerot, T Chen - Chemistry & biodiversity, 2013 - Wiley Online Library

... yellow viscous oil. Flash chromatography over silica gel (SiO2; Puriflash, 300 g; Interchim, F-Montluçon) was performed with cyclohexane/AcOEt and gave pure Z-pGlu-Glu(OBzl)- OBzl as a white solid (3.63 g, 63%). Step 2 (hydrogenolysis ...

60- Synthesis of Precursors for Large‐Diameter Hemispherical Buckybowls and Precursors for Short Carbon Nanotubes

A Mueller, KY Amsharov - European Journal of Organic …, 2012 - Wiley Online Library

... diameter 60 Å, Fluka). Flash chromatography was either carried out by using Kieselgel 60 (0.06–0.2 mm, Roth) or with the automated flash chromatography system PuriFlash 430 evo (Interchim). HPLC measurements were carried ...

61- Design, Synthesis and Biological Evaluation of 4‐Amino‐N‐(4‐aminophenyl) benzamide Analogues of Quinoline‐Based SGI‐1027 as Inhibitors of DNA Methylation

E Rilova, A Erdmann, C Gros, V Masson… - …, 2014 - Wiley Online Library

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62- Disubstituted 3, 4-Diamino-3-Cyclobutene-1, 2-Dione compounds for use in the treatment of chemokine-mediated pathologies

B Musicki, J Aubert, J Boiteaux, L Clary… - US Patent …, 2014 - freepatentsonline.com

Login Sign up. ...

63- Antiproliferative activity of Cyanophora paradoxa pigments in melanoma, breast and lung cancer cells

PH Baudelet, AL Gagez, JB Bérard, C Juin, N Bridiau… - Marine drugs, 2013 - mdpi.com

The glaucophyte Cyanophora paradoxa (Cp) was chemically investigated to identify pigments efficiently inhibiting malignant melanoma, mammary carcinoma and lung adenocarcinoma cells growth. Cp water and ethanol extracts significantly inhibited the growth of the three cancer ...

64- Increasing the efficiency of ligands for FK506-binding protein 51 by conformational control.

Y Wang, A Kirschner, AK Fabian… - Journal of medicinal …, 2013 - ACS Publications

65- Synthesis and Characterization of New Ferrocene‐Containing Ionic Liquids

B Gharib, A Hirsch - European Journal of Organic Chemistry, 2014 - Wiley Online Library

... detection with UV lamp). Flash chromatography was carried out with a Biotage Isolera Prime instrument. PuriFlash columns silica HP-silica 30 (25 g) from Interchim were used for purification. Unless otherwise noted, all iodide ...

66- Substituted 5-aminopyrazoles and use thereof

B Albrecht-Küpper, L Bärfacker… - US Patent App. 12/ …, 2009 - Google Patents

The present application relates to novel substituted 5-aminopyrazoles, methods of production thereof, use thereof alone or in combinations for the treatment and/or prophylaxis of diseases and use thereof for the production of medicinal products for the treatment and/or prophylaxis ...

67- Novel compound useful for the treatment of degenerative and inflammatory diseases

CJM Menet - US Patent App. 14/154,245, 2014 - Google Patents

A novel compound according to Formula I, able to inhibit JAK as disclosed, this compound may be prepared as a pharmaceutical composition, and may be used for the prevention and treatment of a variety of conditions in mammals including humans, including by way of non-limiting ...

68- Use of lipases for the kinetic resolution of lactic acid esters in heptane or in a solvent free system

G Richard, K Nott, F Nicks, M Paquot, C Blecker… - Journal of Molecular …, 2013 - Elsevier

Kinetic resolution of d,l-ethyl lactate (d,l-LA-Et) and d,l-butyl lactate (d,l-LA-Bu) was accomplished in the presence of lipases. Transesterification of the la.

69- Progettazione e sintesi di ligandi sigma selettivi

P Blanco - 2014 - archivia.unict.it

Page 1. UNIVERSITA´ DEGLI STUDI DI CATANIA DIPARTIMENTO DI SCIENZE DEL FARMACO DOTTORATO INTERNAZIONALE IN SCIENZE FARMACEUTICHE XVI CICLO TESI DI DOTTORATO Dr.ssa Palma Blanco TITOLO Progettazione e sintesi di ligandi sigma selettivi ...

70- Chromophores carbo-benzéniques quadripolaires: cibles, synthèses, et propriétés

L Leroyer - 2010 - thesesups.ups-tlse.fr

Page 1. THÈSE En vue de l´obtention du DOCTORAT DE L´UNIVERSITÉ DE TOULOUSE Délivré par l´Université Toulouse III - Paul Sabatier Discipline ou spécialité : Chimie Moléculaire Présentée et soutenue par Léo LEROYER Le 19 mars 2010 ...

Publications

71- DOCTORAT DE L´UNIVERSITÉ DE TOULOUS

HOU Xue Long - 2010 - core.kmi.open.ac.uk

Page 1. THÈSE En vue de l´obtention du DOCTORAT DE L´UNIVERSITÉ DE TOULOUSE Délivré par l´Université Toulouse III - Paul Sabatier Discipline ou spécialité : Chimie Moléculaire Présentée et soutenue par Léo LEROYER Le 19 mars 2010 ...

72- THERAPEUTIC USE

C MITTEL, DIENT ENTHALTEN, UND IHRE… - patentimages.storage.googleapis. …

Page 1. Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. ...

73- Chromatography Columns

J Anderson, K Chodavarapu, L Goldsmith… - US Patent App. 13/ …, 2009 - Google Patents

... For example, the column may be used in most flash systems, such as the flash REVELERIS™ system (available from Grace Davison Discovery Sciences), Teledyne Isco CombiFlash® & RF, Biotage Isolera, Analogix SimpliFlash, Interchim PuriFlash 430, or the like. EXAMPLES ...

74- Substituted thieno [2, 3-c] pyrazoles and their use as medicinal products

A Bigot, F Clerc, G Doerflinger, S Mignani… - US Patent App. 10/ …, 2004 - Google Patents

... The residue thus obtained is purified by flash chromatography on a Puriflash cartridge containing 40 g of SiO 2 (20 μm, spherical), elution being carried out with a cyclohexane/EtOAc mixture (75/25 by volume) at a flow rate of 10 ml/min. ...

75- Cytotoxic agents comprising new tomaymycin derivatives

H Bouchard, RVJ Chari, A Commercon… - US Patent …, 2012 - Google Patents

The present invention is related to new tomaymycin derivatives, their process of preparation and their therapeutic uses.

76- Tetra-substituted pyridinylimidazoles as dual inhibitors of p38α mitogen-activated protein kinase and c-Jun N-terminal kinase 3 for potential treatment of …

F Muth, M Guenther, SM Bauer, P Koch… - Journal of Medicinal …, 2014 - ACS Publications

Page 1. 1 Tetra-substituted pyridinylimidazoles as dual inhibitors of p38α mitogen-activated protein kinase and c-Jun N-terminal kinase 3 for potential treatment of neurodegenerative diseases. Felix Muth, † Marcel Günther, † Silke ...

77- 2-substituted vs 4-substituted-9, 9´-spirobifluorene host materials for green and blue phosphorescent OLEDs: A Structure-Property Relationship Study

S Thiery, C Declairieux, D Tondelier, G Seo, B Geffroy… - Tetrahedron, 2014 - Elsevier

We report a structure-property relationship study of four 9,9´-spirobifluorene (SBF) derivatives (4-5Pm-SBF, 2-5Pm-SBF, 4-Ph-SBF and 2-Ph-SBF), substituted with.

78- Substituted indolo [2, 3-a] quinolizines

H Waldmann, K Kumar, K Hübel, V Pries… - US Patent App. 13/ …, 2012 - Google Patents

The present invention relates to novel substituted indolo[2,3-a]quinolizines and stereoisomeric forms thereof and/or pharmaceutically acceptable salts of these compounds as well as pharmaceutical compositions containing at least one of these substituted indolo[2,3-a]quinolizines ...

79- Azaindole inhibitors of aurora kinases

D Dhanak, KA Newlander - US Patent 7,605,266, 2009 - Google Patents

The present invention relates to a compound represented by Formula (I): and pharmaceutically acceptable salts. Compounds of the present invention inhibit Aurora kinase, making them especially suitable for the treatment of a number of diseases, including solid tumor cancers and ...

80- Design and synthesis of ligands for the FK506-binding proteins and the serotonin transporter

G Ranganath - 2012 - edoc.ub.uni-muenchen.de

Page 1. Dissertation zur Erlangung des Doktorgrades der Fakultät für Chemie und Pharmazie der Ludwig-Maximilians-Universität München Design and Synthesis of Ligands for the FK506- Binding Proteins and the Serotonin Transporter Ranganath Gopalakrishnan aus ...

81- Pyrazolo [1, 5-a] pyridine-3-carboxylic acids as EphB and VEGFR2 kinase inhibitors

P Furet, P Holzer, P Imbach - US Patent 7,795,273, 2010 - Google Patents

The invention relates to novel pyrazolo[1,5-a]pyridine-3-carboxylic acid compounds of the formula in which all of the variables are as defined in the specification, in free form or in salt form, to theirpreparation, to their use as medicaments and to medicaments comprising them.

82- Pyrimidinyl-Pyrazole Inhibitors of Aurora Kinases

JL Adams, TH Faitg, JM Ralph… - US Patent App. 12/064,820, 2006 - Google Patents

The present invention provides a compound represented by Formula (I): or a salt thereof, or a solvate thereof, or a combination thereof, wherein the substituents are as defined herein. The present invention also relates to a composition comprising the compound of formula (I) and ...

83- As01 As02

B Part - Chimia, 2013 - isic3.epfl.ch

Page 1. 462 Chimia 2013, 67, Nr. 7/8 ANALYTICAL SCIENCES doi:10.2533/chimia.2013.462 Chimia 67 (2013) 462–475© Schweizerische Chemische Gesellschaft Analytical Sciences ESTASI Elena Tobolkina, Natalia Gasilova, Liang Qiao, Qiuliyang Yu, Hubert H. Girault ...

84- СИНТЕЗ И ИССЛЕДОВАНИЯ БИОЛОГИЧЕСКОЙ АКТИВНОСТИ НОВЫХ ПОТЕНЦИАЛЬНЫХ БЛОКАТОРОВ РЕЦЕПТОРА NR3C4

МИ Брылев - mma.ru

Page 1. ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ ПЕРВЫЙ МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ имени И.М. Сеченова ...

85- Design and synthesis of new vinca alkaloid derivatives as potential sigma-2 receptor ligands

A Grillo - 2011 - archivia.unict.it

Page 1. University of Catania faculty of pharmacy department of pharmaceutical sciences international doctorate in pharmaceutical sciences XXIII Cycle Semmelweis University - Budapest ...

Publications

86- Atividade antifúngica de extratos depositados no banco de extratos de plantas do Bioma Cerrado e de substâncis isoladas de Matayba Guianensis

PA Assis - 2014 - repositorio.unb.br

Page 1. POLYANA ARAÚJO DE ASSIS ATIVIDADE ANTIFÚNGICA DE EXTRATOS DEPOSITADOS NO BANCO DE EXTRATOS DE PLANTAS DO BIOMA CERRADO E DE SUBSTÂNCIAS ISOLADAS DE MATAYBA GUIANENSIS BRASÍLIA, 2013 Page 2. ...

87- Hydroxymethylaryl-substituted pyrrolotriazines as alk1 inhibitors

J Klar, V Vöhringer, J Telser, M Lobell… - US Patent App. 14/ ..., 2012 - Google Patents

This invention relates to novel 5-[(hydroxymethyl)aryl]-substituted pyrrolo[2,1-f][1,2,4]triazin-4-amines of formula (I), to processes for the preparation of such compounds, to pharmaceutical compositions containing such compounds, and to the use of such compounds or compositions ...

88- Azaindole inhibitors of aurora kinases

MA Sarpong, ND Adams, JM Axten… - US Patent ..., 2009 - Google Patents

The present invention relates to a compound represented by Formula (I): and pharmaceutically acceptable salts. Compounds of the present invention inhibit Aurora kinase, making them especially suitable for the treatment of a number of diseases, including solid tumor cancers and ...

89- Catalyseurs greffés sur support et libérés sous stimulus externe

G Gogolieva - 2014 - oatao.univ-toulouse.fr

Page 1. En vue de l´obtention du DOCTORAT DE L´UNIVERSITÉ DE TOULOUSE Délivré par : Institut National Polytechnique de Toulouse (INP Toulouse) Discipline ou spécialité : Chimie Organométallique et de Coordination Présentée et soutenue par : ...

90- Therapeutic use of of acyglycerols and the nitrogen-and sulphur-containing analogues thereof

K Caumont-Bertrand, R Darteil… - US Patent App. 10/540,482, 2004 - Google Patents

The invention relates to the use of acylglycerols and the nitrogen- and sulfur-containing analogues thereof in therapy, particularly for the treatment of cerebral ischemia. The invention further relates to methods for preparing said derivatives, novel compounds, in particular acylglycerols ...

91- Anticancer derivatives, preparation thereof and therapeutic use thereof

A Commercon, L Gauzy-Lazo… - US Patent App. 13/750,691, 2013 - Google Patents

Provided herein are compounds of formula (I):

92- Substituted phenylimidazopyrazoles and their use

F Süssmeier, M Lobell, S Grünewald… - US Patent App. 13/ ..., 2013 - Google Patents

The present application relates to novel 1-phenyl-1H-imidazo[1,2-b]pyrazole derivatives, to processes for their preparation, to their use for the treatment and/or prevention of diseases and to their use for preparing medicaments for the treatment and/or prevention of diseases, in particular ...

93- 1, 2-bis-sulfonamide derivatives as chemokine receptor modulators

H Yuan, RL Beard, ME Garst, X Liu, JE Donello… - US Patent ..., 2014 - Google Patents

The present invention relates to novel bis-sulfonamide derivatives, processes for preparing them, pharmaceutical compositions containing them and their use as pharmaceuticals as modulators of chemokine receptors.

94- Bicyclic Aryl and Heteroaryl Sodium Channel Inhibitors

C Boezio, H Bregman, JR Coats… - US Patent App. 13/ ..., 2012 - Google Patents

The present invention provides compounds of Formula I, or pharmaceutically acceptable salts thereof, that are inhibitors of voltage-gated sodium channels, in particular Nav 1.7. The compounds are useful for the treatment of diseases treatable by inhibition of sodium channels such ...

95- Therapeutic use of acyl glycerols and the nitrogen-and sulphur-containing analogues thereof

K Caumont-Bertrand, R Darteil… - US Patent App. 10/542,512, 2004 - Google Patents

The invention relates to the use of acyl glycerols and the nitrogen- and sulfur-containing analogues thereof in the therapeutic field, particularly in human health. The inventive compounds have advantageous pharmacological properties and are particularly of use for the prevention ...

96- Novel 1, 2-bis-sulfonamide derivatives as chemokine receptor modulators

H Yuan, RL Beard, X Liu, JE Donello… - US Patent App. 14/ ..., 2014 - Google Patents

The invention relates to the use of acyl glycerols and the nitrogen- and sulfur-containing analogues thereof in the therapeutic field, particularly in human health. The inventive compounds have advantageous pharmacological properties and are particularly of use for the prevention ...

97- Pyrazolyl-Based Carboxamides II

S Nordhoff, S Wachten, A Kless, F Voss… - US Patent App. 14/ ..., 2014 - Google Patents

The invention relates to pyrazolyl-based carboxamide compounds useful as ICRAC inhibitors, to pharmaceutical compositions containing these compounds and to these compounds for the use in the treatment and/or prophylaxis of diseases and/or disorders, in particular inflammatory ...

98- Pyrazolyl-Based Carboxamides I

S Nordhoff, S Wachten, A Kless, F Voss… - US Patent App. 14/ ..., 2014 - Google Patents

The invention relates to pyrazolyl-based carboxamide compounds useful as ICRAC inhibitors, to pharmaceutical compositions containing these compounds and to these compounds for the use in the treatment and/or prophylaxis of diseases and/or disorders, in particular inflammatory ...

99- Spiro-Amino-Imidazolone and Spiro-Amino-Dihydro-Pyrimidinone Compounds as Beta-Secretase Modulators and Methods of Use

AE Minatti, O Epstein, R White, M Weiss… - US Patent App. 13/ ..., 2011 - Google Patents

The present invention provides a new class of compounds useful for the modulation of beta-secretase enzyme (BACE) activity. The compounds have a general Formula (I), wherein variables A1, A3, A4, A5, A6, A8, L, R2, R7, R9, W and Y of Formula (I) are defined herein. The ...

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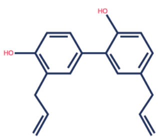
INTERCHIM - Natural compounds

A Natural compound is a compound not obtained by synthesis.

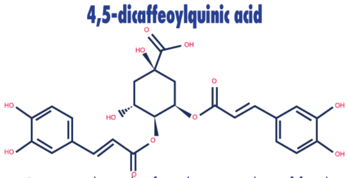
For ages, Natural compounds have been used for pharmaceutical and cosmetic purposes. Since the beginning of XIX[th] century, chemistry and Natural compounds combine to achieve a lot of active products (from aspirine to anticancer medicines for example). The industry is still using and inspired by Natural compounds. Based on this observation, Interchim® decide to propose a catalogue dedicated to Natural compounds.

Honokiol



Component of a medicinal plant, the magnolia bark. Pharmacological potential advantages for several diseases, especially for cancer.

4,5-dicaffeoylquinic acid

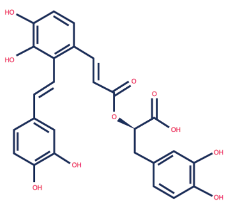


Compound can be found in a number of food items such as arabica coffee, robusta coffee, coffee, and carrot. Potent hepatoprotective and anti-HBV effects.

Ailanthone

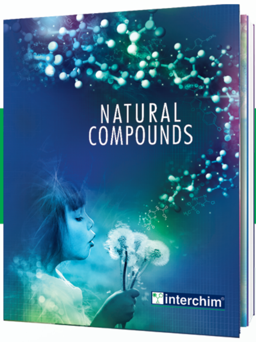
Constituent of Ailanthus altissima. It has antimalarial and antitumor activities.

Salvianolic acid A



One of the major active components of Salviae Miltiorrhizae Bunge. Used as anti-ulcer agents and sometimes in place of histamine H_2 antagonists for gastroesophageal reflux.

Coming soon



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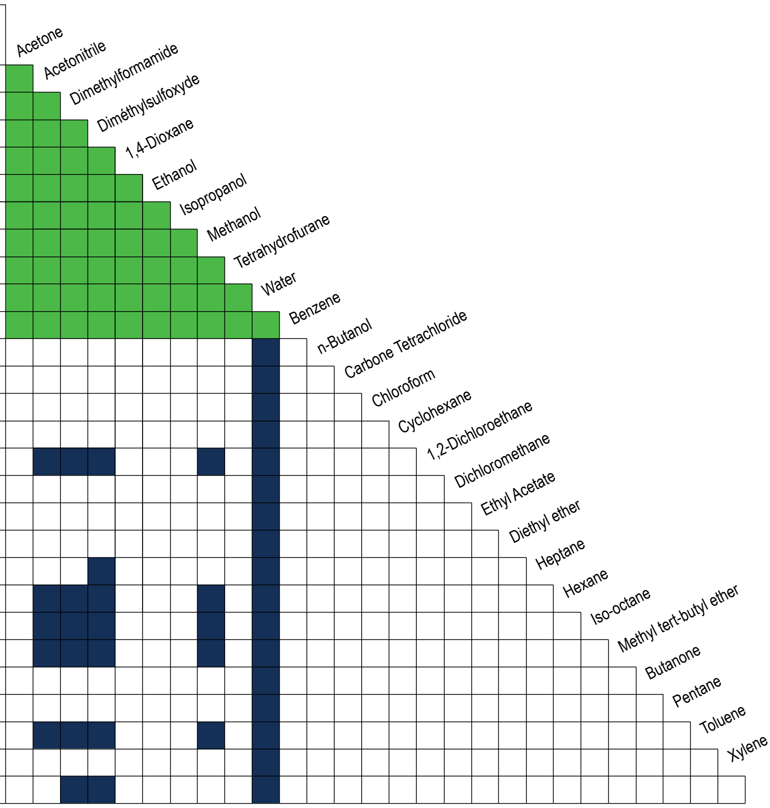
Technical Tips

Solvent miscibility table & cut-off

UV (nm) Cutoff	Viscosity (CPoise) 20°C	Solvent
330	0.36	Acetone
190	0.38 (15°C)	Acetonitrile
268	0.92	Dimethylformamide
268	2.24	Diméthylsulfoxyde
215	1.37	1,4-Dioxane
210	1.20	Ethanol
120	2.30	Isopropanol
205	0.59	Methanol
215	0.55	Tetrahydrofurane
200	1.00	Water
280	0.65	Benzene
254	0.73	n-Butanol
263	0.97	Carbone Tetrachloride
245	0.57	Chloroform
200	1.00	Cyclohexane
225	0.79	1,2-Dichloroethane
235	0.44	Dichloromethane
260	0.45	Ethyl Acetate
220	0.32	Diethyl ether
200	0.42	Heptane
200	0.31	Hexane
215	0.50	Iso-octane
210	0.27	Methyl tert-butyl ether
329	0.45	Butanone
200	0.23	Pentane
285	0.59	Toluene
290	0.61	Xylene



Miscible with water | Miscible | Immiscible

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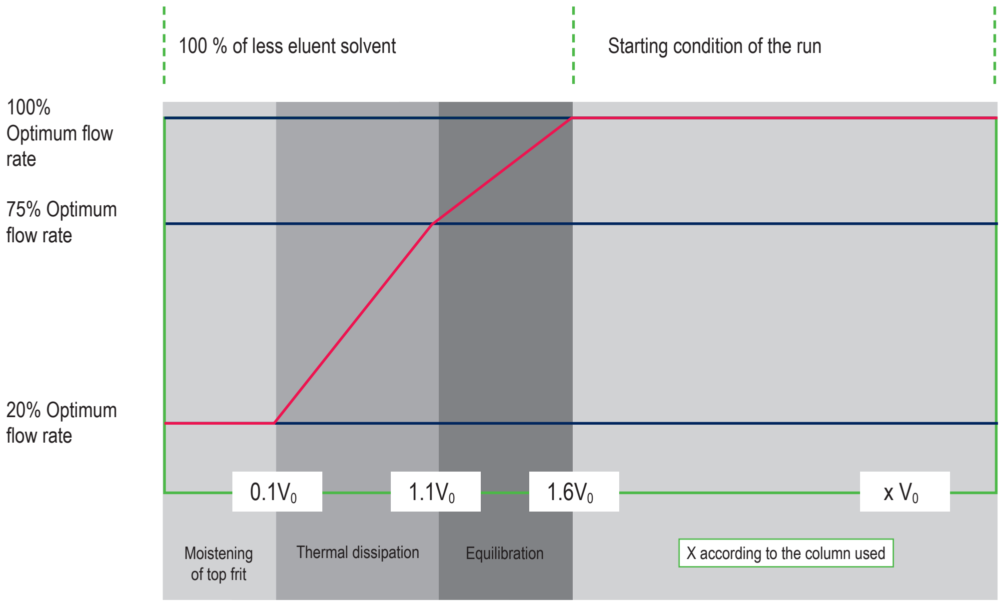
Solvent Strength

Solvents List	ξ0 Silica Virgin	ξ0 Alumina	ξ0 Silica Diol	ξ0 Silica CN	ξ0 Silica NH2	ξ0 Silica C18, C4, C8, PH, RPAQ	ξ0 Magnesie	ξ0 Florisil
Acetone	0.470	0.560	0.141	0.470	0.470		0.325	0.291
Acetonitrile	0.501	0.650	0.150	0.501	0.501	0.577	0.377	0.338
Benzene	0.246	0.319	0.074	0.246	0.246		0.185	0.166
Butanol	0.550	0.714	0.165	0.550	0.550		0.414	0.371
Carbon tetrachloride	0.139	0.180	0.042	0.139	0.139		0.104	0.094
Chloroform	0.260	0.400	0.078	0.260	0.260		0.232	0.208
Cyclohexane	0.030	0.040	0.000	0.000	0.000		0.023	0.021
Cyclopentane	0.000	0.050	0.000	0.000	0.000		0.029	0.026
1,2-Dichloroethane	0.339	0.490	0.102	0.339	0.339		0.284	0.255
Dichloromethane	0.323	0.420	0.097	0.323	0.323		0.244	0.218
Diethylamine	0.485	0.630	0.146	0.485	0.485		0.365	0.328
Diethyl ether	0.385	0.380	0.115	0.385	0.385		0.220	0.198
Diisopropyl ether	0.223	0.280	0.067	0.223	0.223		0.162	0.146
N,N-Dimethylformamide	0.640	0.831	0.192	0.640	0.640		0.482	0.432
Dimethyl sulfoxide	0.470	0.620	0.141	0.470	0.470		0.360	0.322
Dioxane	0.490	0.560	0.147	0.490	0.490		0.325	0.291
Ethanol	0.677	0.879	0.203	0.677	0.677		0.510	0.457
Ethyl acetate	0.380	0.580	0.114	0.380	0.380		0.336	0.302
Heptane	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Hexane	0.000	0.010	0.000	0.000	0.000		0.006	0.005
Hexanol	0.385	0.500	0.115	0.385	0.385		0.290	0.260
Isooctane	0.000	0.010	0.000	0.000	0.000		0.006	0.005
Isopropanol	0.590	0.820	0.177	0.590	0.590		0.476	0.426
Isopropyl chloride	0.223	0.290	0.067	0.223	0.223		0.168	0.151
Methanol	0.732	0.950	0.219	0.732	0.732	0.450	0.551	0.494
Methyl acetate	0.393	0.510	0.118	0.393	0.393		0.296	0.265
Methyl ethyl ketone	0.393	0.510	0.118	0.393	0.393		0.296	0.265
Methyl tert-butyl ether	0.470	0.610	0.141	0.470	0.470		0.354	0.317
Pentane	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Petroleum ether	0.000	0.010	0.000	0.000	0.000		0.006	0.005
Propanol	0.631	0.819	0.189	0.631	0.631		0.475	0.426
Pyridine	0.550	0.714	0.165	0.550	0.550		0.414	0.371
Tetrahydrofuran	0.346	0.449	0.104	0.346	0.346	0.726	0.261	0.234
Toluene	0.223	0.290	0.067	0.223	0.223		0.168	0.151
Water						0.000		

Flash columns conditioning (from F0001 up to F1600 format)



Equilibration volume per column

	Format	V0 (mL)	nb of V0
IR-50SI PF-50SIAG PF-ALN PF-ALB	F0001	2.2	5
	F0004	5.2	5
	F0012	21.3	4
	F0025	33.6	4
	F0040	54.0	4
	F0080	113.6	4
	F0120	165.9	3
	F0220	304.0	3
	F0330	456.7	3
	F0800	1174.6	2
	F1600	2333.4	2
IR-20SI PF-50SIHP	F0004	5.2	5
	F0012	21.1	4
	F0025	33.2	4
	F0040	53.3	4
	F0080	112.2	4
	F0120	163.9	3
	F0220	300.4	3
	F0330	451.0	3
	F0800	1159.6	2
	F1600	2303.4	2
PF-30SIHP	F0004	5.1	4
	F0012	20.9	3
	F0025	32.8	3
	F0040	52.7	3
	F0080	110.8	3
	F0120	161.8	2
	F0220	296.8	2
	F0330	445.4	2
	F0800	1144.7	2
	F1600	2273.4	2

	Format	V0 (mL)	nb of V0
PF-50SIHC	F0004	5.4	4
	F0012	22.0	3
	F0025	34.8	3
	F0040	55.8	3
	F0080	117.8	3
	F0120	172.1	2
	F0220	314.8	2
	F0330	473.6	2
	F0800	1219.6	2
	F1600	2423.3	2
PF-25SIHC	F0004	5.4	4
	F0012	21.8	3
	F0025	34.4	3
	F0040	55.2	3
	F0080	116.4	3
	F0120	170.0	2
	F0220	311.2	2
	F0330	468.0	2
	F0800	1204.6	2
	F1600	2393.3	2
PF-15SIHC	F0001	2.2	5
	F0004	5.3	4
	F0012	21.6	3
	F0025	34.0	3
	F0040	54.6	3
	F0080	115.0	3
	F0120	168.0	2
	F0220	307.6	2
	F0330	462.3	2

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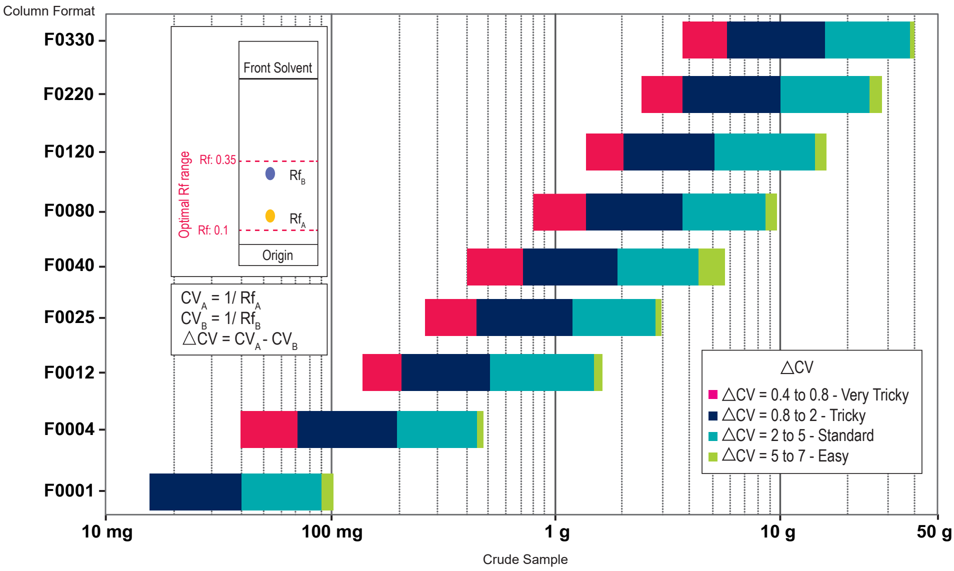
Technical Tips - Flash Columns Conditioning & Equilibration Volume per Column

	Format	V0 (mL)	nb of V0
PF-15SIHP	F0001	2.1	5
	F0004	5.0	4
	F0012	20.7	3
	F0025	32.4	3
	F0040	52.1	3
	F0080	109.4	3
	F0120	159.8	2
	F0220	293.2	2
	F0330	439.7	2
IR-50C18 PF-C18HQ PF-C18XS PF-C18HP PF-C18AQ PF-RPAQ PF-PHC4 PT-C18T PT-C8 PT-C4 PP-C18 PP-C4 PT-C18XS PT-C18N PT-C8N PT-C18AQ PP-C4AQ PFB-C18N PFB-C18T PFB-C18XS PT-RP PP-RPT	F0001	2.2	5
	F0004	5.2	5
	F0012	21.3	5
	F0025	33.6	5
	F0040	54.0	5
	F0080	113.6	5
	F0120	165.9	5
	F0220	304.0	5
	F0330	456.7	5
	F0800	1174.6	5
	F1600	2333.4	5
PF-DIOL PF-MM1 PF-CN PF-NH2HC PF-NH2 PF-SAX PF-SCX	F0004	5.2	5
	F0012	21.3	5
	F0025	33.6	5
	F0040	54.0	5
	F0080	113.6	5
	F0120	165.9	5
	F0220	304.0	5
	F0330	456.7	5
	F0800	1174.6	5
	F1600	2333.4	5
PF-15HIA	F0001	2.2	6
	F0004	5.2	6
	F0012	21.3	6
	F0025	33.6	6
	F0040	54.0	6
	F0080	113.6	6
	F0120	165.9	6
	F0220	304.0	6
	F0330	456.7	6

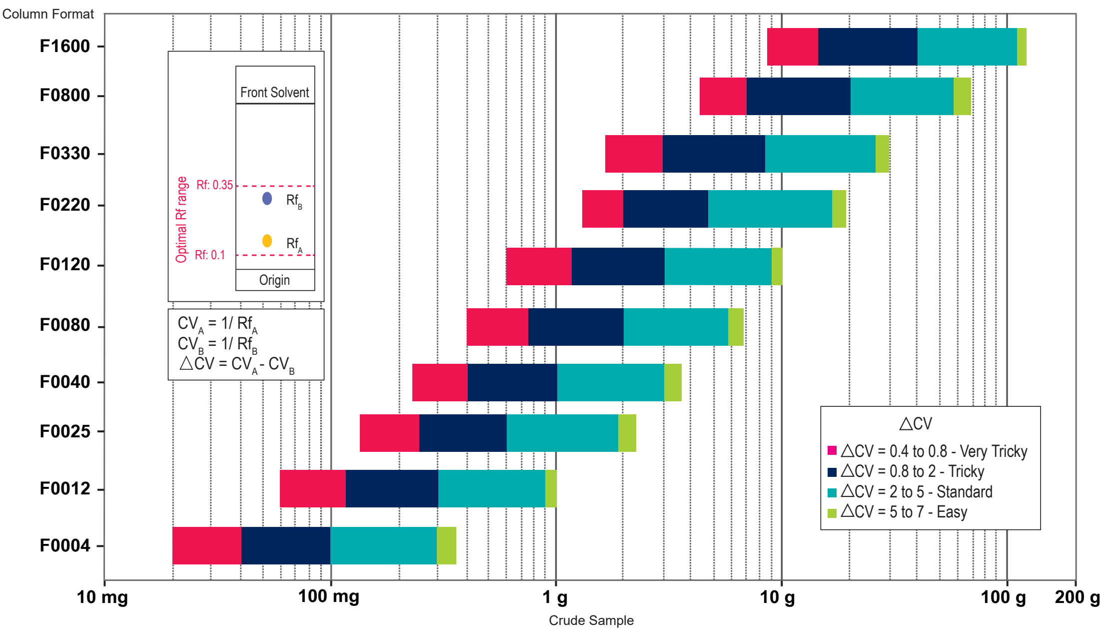
	Format	V0 (mL)	nb of V0
PF-X PF-100P6	F0004	5.2	5
	F0012	21.3	5
	F0025	33.6	5
	F0040	54.0	5
	F0080	113.6	5
	F0120	165.9	5
	F0220	304.0	5
	F0330	456.7	5
	F0800	1174.6	5
	F1600	2333.4	5
CT-20OD-I CT-20ID CT-20IA CT-20IC	F0004	5.2	7
	F0012	21.3	7
	F0025	33.6	7
	F0040	54.0	7
	F0080	113.6	7
	F0120	165.9	7
	F0220	304.0	7
PF-AC	F0004	5.2	4
	F0012	21.3	3
	F0025	33.6	3
	F0040	54.0	3
	F0080	113.6	3
	F0120	165.9	2
	F0220	304.0	2
	F0330	456.7	2
	F0800	1174.6	2
	F1600	2333.4	2
PT-RPNH PP-RPNH	F0004	5.2	5
	F0012	21.3	5
	F0025	33.6	5
	F0040	54.0	5
	F0080	113.6	5
	F0120	165.9	5
	F0220	304.0	5
	F0330	456.7	5
	F0800	1174.6	5
	F1600	2333.4	5

Loading Selection Guide for puriFlash® PF-15SIHP



Average values for compounds < 800 MW
These data depend on the conditions of elution and the products to be purified.

Loading Selection Guide for puriFlash® PF-30SIHP



Average values for compounds < 800 MW
These data depend on the conditions of elution and the products to be purified.

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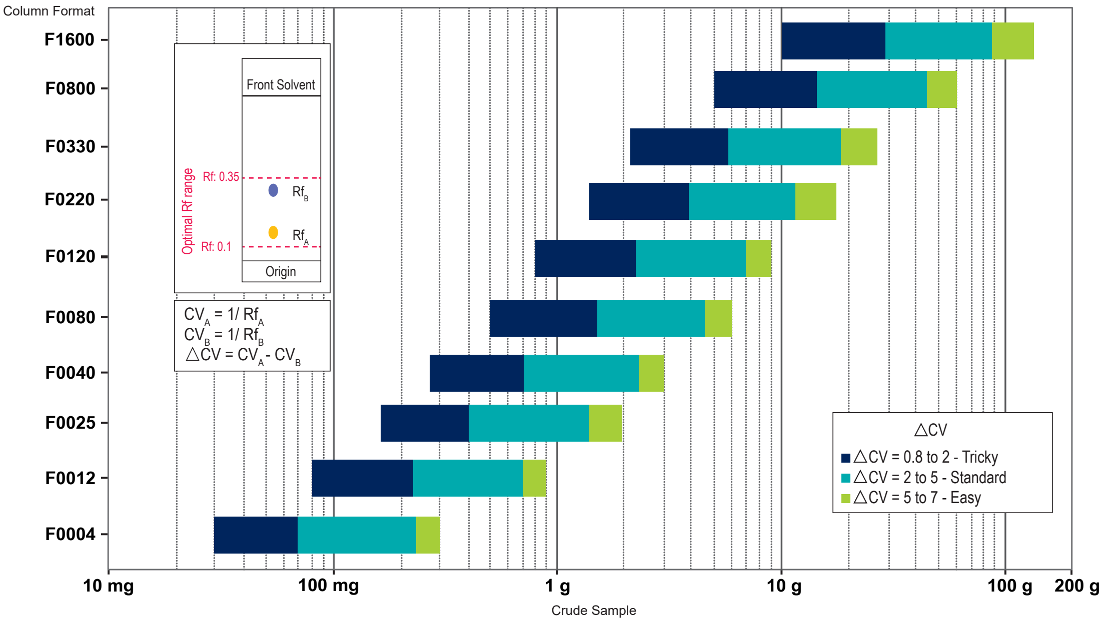
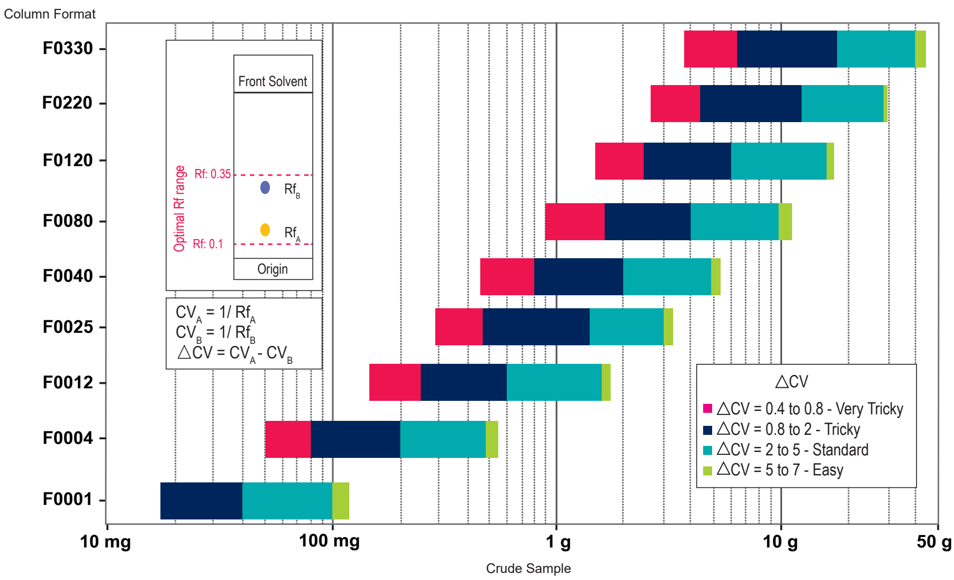
Loading Selection Guide for puriFlash® PF-50SIHP



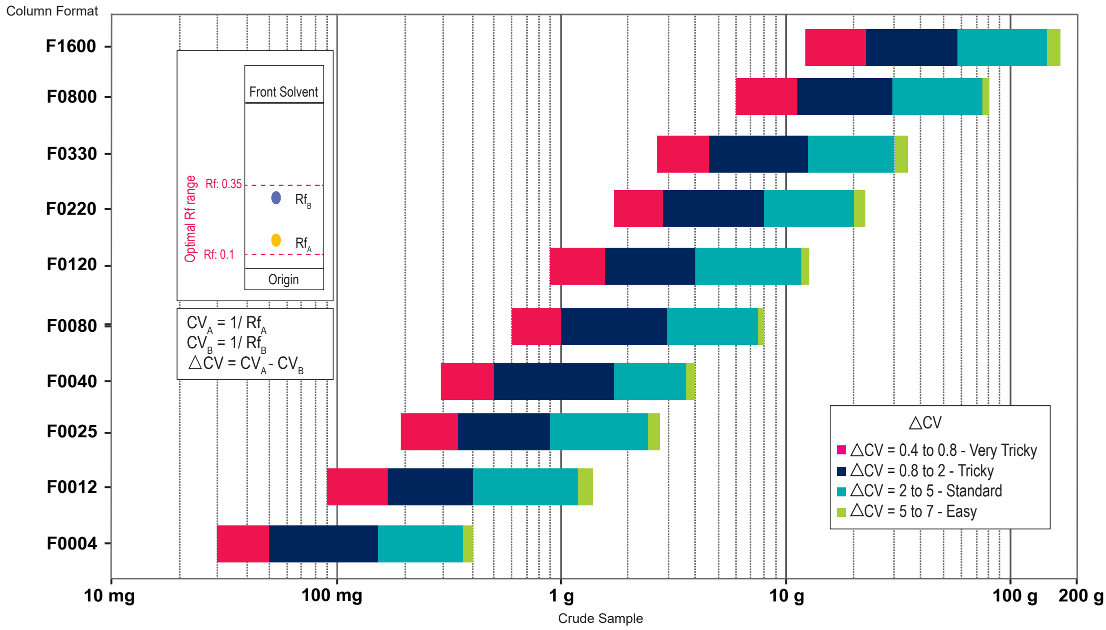
Average values for compounds < 800 MW
These data depend on the conditions of elution and the products to be purified.

Loading Selection Guide for puriFlash® PF-15SIHC



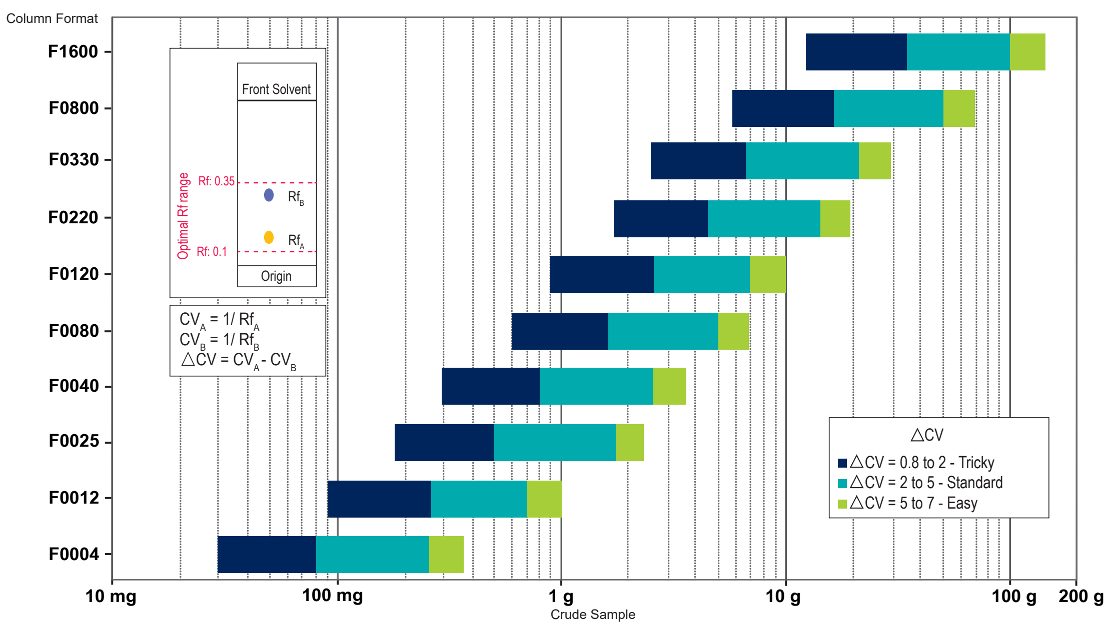
Average values for compounds < 500 MW
These data depend on the conditions of elution and the products to be purified.

Loading Selection Guide for puriFlash® PF-25SIHC



Average values for compounds < 500 MW
These data depend on the conditions of elution and the products to be purified.

Loading Selection Guide for puriFlash® PF-50SIHC



Average values for compounds < 500 MW
These data depend on the conditions of elution and the products to be purified.

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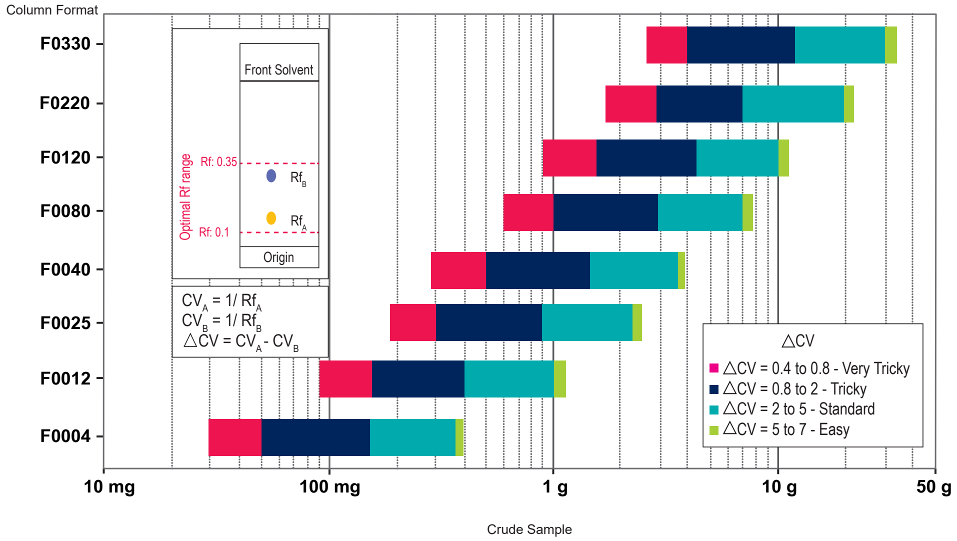
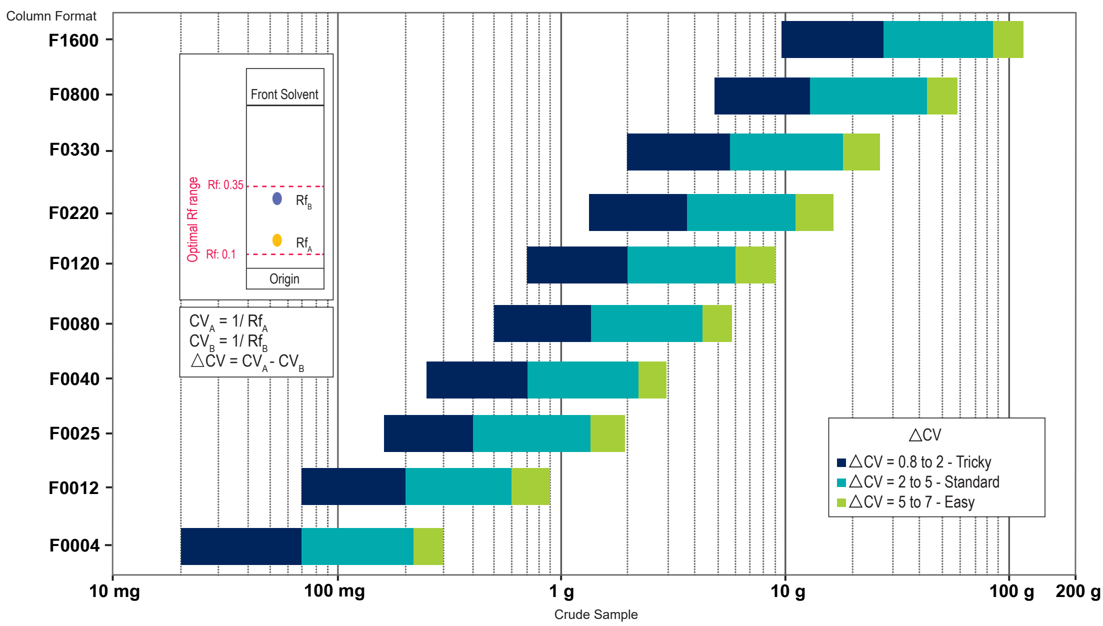
Loading Selection Guide for puriFlash® IR-20SI



Average values for compounds < 800 MW
These data depend on the conditions of elution and the products to be purified.

Loading Selection Guide for puriFlash® IR-50SI



Average values for compounds < 800 MW
These data depend on the conditions of elution and the products to be purified.

Loading capacity

The loading capacity depends on the ΔCV of the TLC plate or the resolution between 2 peaks obtained on the LC column. Higher the resolution and ΔCV are, the more important the load can be.

Loading: 0.1% to 0.3%
puriFlash® CT-20IA
puriFlash® CT-20IC
puriFlash® CT-20ID
puriFlash® CT-20OD-I

Loading: 0.1% to 0.7%
puriFlash® PT-C18AQ
puriFlash® PT-C8
puriFlash® PT-C4
puriFlash® PP-C18
puriFlash® PP-C4
puriFlash® Bio 200Å C18N, C18T, C18XS, C8N, RPNH, RP
puriFlash® Bio 300Å C4-AQ, RPNH

Loading: 0.1% to 1.4%
puriFlash® C18HP
puriFlash® C18XS
puriFlash® C18AQ
puriFlash® RPAQ
puriFlash® C18T
puriFlash® CN
Uptisphere® CN
puriFlash® Diol
puriFlash® IR-C18
puriFlash® NH_2
puriFlash® NH_2HC
puriFlash® Bio 100Å C18N, C18XS, C18T, C4AQ, RPNH
Uptisphere® C18-NEC
Uptisphere® Strategy™ C18HQ
Uptisphere® Strategy™ C18-3
Uptisphere® Strategy™ C18RP
Uptisphere® Strategy™ HIA
Uptisphere® Strategy™ HIT
Uptisphere® Strategy™ PHC4

Loading: 0.1% to 5%
puriFlash® Atoll X
puriFlash® P6

Loading: 0.1% to 10%
puriFlash® ALB
puriFlash® ALN
puriFlash® $AgN0_3$
puriFlash® AC

Loading capacity for bonded phases (RP & NP)

Loading capacity for bonded phases as a percentage of the adsorbent mass in the column						
		Δk = 0.4	Δk = 0.8	Δk = 2	Δk = 5	Δk = 7
15µm	60Å < pore size < 120Å	0,12%	0,20%	0,55%	1,30%	1,40%
	200Å < pore size < 300Å	0,06%	0,10%	0,25%	0,65%	0,70%
30µm	60Å < pore size < 120Å	0,07%	0,10%	0,30%	0,90%	1,10%
	200Å < pore size < 300Å	0,03%	0,06%	0,15%	0,45%	0,60%
50µm	60Å < pore size < 120Å	...	0,08%	0,20%	0,70%	0,90%
	200Å < pore size < 300Å	...	0,04%	0,10%	0,35%	0,50%

These values are given as an indication and may vary depending on the molecules and adsorbents used.

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puriFlash® Care of Use, Cleaning & Storage

Storage before use:
Store the columns in a cool place, away from light and dust.
Do not remove the blue caps until the column is required for use.

First use:
puriFlash® columns fittings are Luer-type.
Attach the bottom of the column to a female Luer connector.
Attach the top of the column to a male Luer-lock connector.

Column conditioning:
This stage is essential to benefit of the full performance of the column.
It activates the silica & expels the air present in the column.
For optimum purification, this stage must be performed before the sample loading.
Rinse the column with 3 to 5 column volumes of solvent.
The solvent chosen is generally the solvent used at the start of the purification.

Conditioning with a strong eluent will lead to poor separation due to the high affinity of the solvent with the compounds to be purified.

Drying the column after the conditioning stage results in column performance loss.

Before use:
Store the column dry in a cool place & away from light & dust.

Stationnary Phase	Activation	Cleaning	Storage
puriFlash® C18HP, C18HQ, C18XS C18, PhC4 **puriFlash® Bio C18N, C8N, C18T, 45RP, 50RPT, RPNH, C8,C4**	Rinse with 20% MeOH - 80% water or 30% ACN - 70% water. A minimum of 3% of organic is required to keep the activation of the bonded phase. 3 to 4 column volume are necessary. Once the column is activated never dry it.	After each run: Rinse with 3 to 4 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at least a 20 to 25% of organic such as Acetonitrile, MeOH, Ethanol, Isopropanol… For a long term storage, flush the column with miscible solvents to reach at least a 50% of Acetonitrile (or MeOH) - 50% water or 100% of Isopropanol. For both, pass through 6 to 8 column volumes.
puriFlash® C18AQ puriFlash® RPAQ puriFlash® Bio C4AQ	Rinse with 20% MeOH - 80% water or 30% ACN - 70% water. Depending of the mobile phase chosen for the purification, rinse the column with 100% of water. 3 to 4 column volume are necessary. Once the column is activated never dry it.	After each run: Rinse with 3 to 4 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at least a 20 to 25% of organic such as Acetonitrile, MeOH, Ethanol, Isopropanol… For a long term storage, flush the column with miscible solvents to reach at least a 50% of Acetonitrile (or MeOH) - 50% water or 100% of Isopropanol. For both, pass through 6 to 8 column volumes.
puriFlash® Atoll X	Rinse with 20% MeOH - 80% water or 30% ACN - 70% water. A minimum of 5% of organic is required to keep the activation of the bonded phase. 3 to 4 column volume are necessary. Once the column is activated never dry it.	After each run: Rinse with 3 to 4 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at least a 20 to 25% of organic such as Acetonitrile, MeOH, Ethanol, Isopropanol… For a long term storage, flush the column with miscible solvents to reach at least a 50% of Acetonitrile (or MeOH) - 50% water or 100% of Isopropanol. For both, pass through 6 to 8 column volumes.

Before use:
Store the column dry in a cool place & away from light & dust.

Stationnary Phase	Activation	Cleaning	Storage
puriFlash® CN puriFlash® NH2 puriFlash® Diol	If the column will be used under NP mode: Rinse with 100% Heptane. 3 to 4 column volume are necessary. Once the column is activated never dry it. Do not leave the column unde Heptan or Hexane for more than a day. If the column will be used under RP mode: Rinse with 20% MeOH - 80% water or 30% ACN - 70% water. A minimum of 5% of organic is required to keep the activation of the bonded phase. 3 to 4 column volume are necessary. Once the column is activated never dry it.	After each run: Rinse with 3 to 4 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at least a 20 to 25% of Ethanol or Isopropanol… For a long term storage, flush the column with miscible solvents to reach at least a 50% of Ethanol - 50% water or 100% of Isopropanol. For both, pass through 6 to 8 column volumes.
puriFlash® SCX puriFlash® MM1	Rinse with 20% MeOH - 80% water or 30% ACN - 70% water. 6 to 8 column volume are necessary. Once the column is activated never dry it .	After each run: Rinse with 6 to 8 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at least a 20 to 25% of Ethanol or Isopropanol plus 0.5% of Sodium azide. For a long term storage, flush the column with miscible solvents to reach 1M acetic acid in MeOH, pass through 8 to 10 column volumes. then reach at least a 50% of Ethanol - 50% water plus 0.5% of Sodium azide or 100% of Isopropanol plus 0.5% of Sodium azide.
puriFlash® SAX	Rinse with 20% MeOH - 80% water or 30% ACN - 70% water. 6 to 8 column volume are necessary. Once the column is activated never dry it.	After each run: Rinse with 6 to 8 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at least a 20 to 25% of Ethanol or Isopropanol plus 0.5% of Sodium azide. For a long term storage, flush the column with miscible solvents to reach 5% NH4OH in MeOH, pass through 8 to 10 column volumes. then reach at least a 50% of Ethanol - 50% water plus 0.5% of Sodium azide or 100% of Isopropanol plus 0.5% of Sodium azide.
HILIC - HIA	Rinse with 70% ACN - 30% water. 3 to 4 column volume are necessary. Once the column is activated never dry it.	After each run: Rinse with 3 to 4 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: For a short term storage, flush the column with miscible solvents to reach at a 70% of Acetonitrile.For a long term storage, flush the column with miscible solvents to reach at least a 100% of Acetonitrile.For both, pass through 6 to 8 column volumes. Avoid Ethanol, Methanol, Acetone, Isopropanol.
CT-20IA CT-20IC CT-20ID CT-OD-I	For more details, please refers to www.chiral.fr		Never storage under Hexane, Cyclohexane, Heptane For a long term storage, flush the column with miscible solvents to reach 100% of EtOH Pass through 6 to 8 column volumes of 100 % EtOH.
P6	Active the stationary phase with the starting eluent condition. Once the column is activated never dry it.	After each run: Rinse with 3 to 4 column volumes of the strongest solvent (100%) to remove impurities.	After the final run: Flush the column with 100 % of Isopropanol. Avoid Dichloromethane, DMF.

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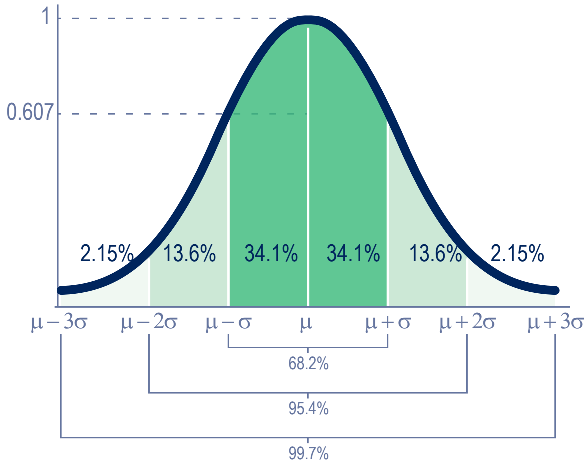
Gaussian Representation of a Peak

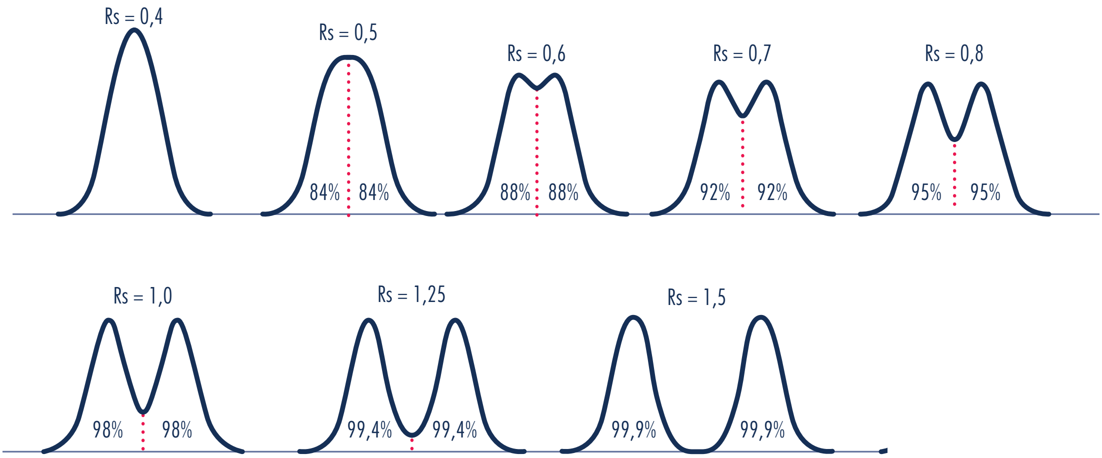


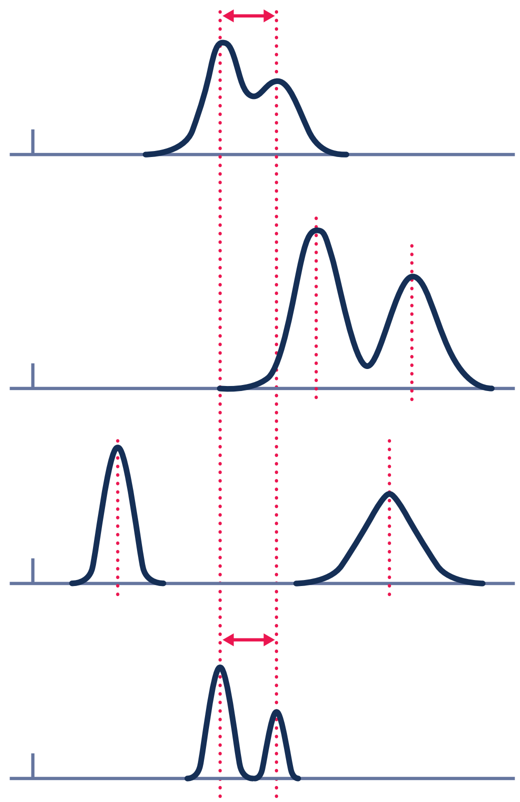
μ: Average values σ: Standard deviation of values

NOTES

Back to SUMMARY

Peaks Shape according to Rs & its relative heights





High particle diameter and incomplete separation

Improvement by:
- increasing retention, decreasing the eluting force
- increasing the quantity of stationary phase (column size)
- changing stationary phase

- modifying the selectivity (gradient, proportion of solvent, choice of other solvents)

- increasing the efficiency (number of plates) with smaller particles size

↔ Separation estimated by selectivity α (LC) or ΔR_f (TLC)

Usual Buffers in HPLC

pKa	Buffer	Buffer range	LC/MS compatibility
0.3	TFA (0.1%)	1.8	Yes
2.1 (pK1)	Phosphate	1.1 - 3.1	No
3.1 (pK1)	Citrate	2.1 - 4.1	No
3.8	Ammonium formate	2.8 - 4.8	Yes
3.8	Formic acid (0.1%)	2.7	Yes
4.7 (pK2)	Citrate	3.7 - 5.7	No
4.8	Ammonium acetate	3.8 - 5.8	Yes
4.8	Acetic acid (0.1%)	3.3	Yes
6.4 (pK3)	Citrate	4.4 - 6.4	No
7.2 (pK2)	Phosphate	6.2 - 8.2	No
7.6	Ammonium bicarbonate	6.6 - 11.3	Yes
8.3	Tris	7.3 - 9.3	No
9.2	Borate	8.2 - 10.2	No
9.2	Ammonia 25% (0.1%)	8.8	Yes
10.7	Triethylamine acetate	9.7 - 11.7	Yes
12.3 (pK3)	Phosphate	11.3 - 13.3	No

Concentrations

%	10^x	ppm	ppb	ppt	mg/mL or µg/µL
1	10^{-2}	10 000	10 000 000	10 000 000 000	10
0.1	$1x10^{-3}$	1 000	1 000 000	1 000 000 000	1
0.01	$1x10^{-4}$	100	100 000	100 000 000	0.1
0.001	$1x10^{-5}$	10	10 000	10 000 000	0.02
0.0001	$1x10^{-6}$	1	1 000	1 000 000	0.001
0.00001	$1x10^{-7}$	0,1	100	100 000	0.0001
0.000001	$1x10^{-8}$	0,01	10	10 000	0.00001
0.0000001	$1x10^{-9}$	0,001	1	1 000	0.000001

Troubleshooting

Columns	Key Words	Question
Flash	$AgNO_3$	What is PF-50SIAg?
Flash	Alumine	What are alumine phases ?
Flash	Amine NH_2	How to use Amine columns?
Flash	Carbon, Activated Carbon	What are PF-AC columns?
Flash	Cyano	How to use Cyano columns?
Flash	DIOL	What is DIOL stationary phase?
Flash	Efficiency	How to compare theorically Flash columns efficiency?
Flash	Equilibration - Flow rate gradient	Why you should use a flow rate gradient with flash columns during equilibration?

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Answer

PF-50SIAG: Silica + $AgNO_3$ phases.
Impregnated silver nitrate silica 4%.

There are 3 different Alumina phases (Al_2O_3):
- Neutral Alumina (pH=7)
- Basic Alumina (Al-O-Na) (pH=9,7)
- Acid Alumina (Al-O-Cl) (pH=4,5)

Stability: pH 2-11 (more important than silica).
The retention mechanism is based on 3 types:
- Giver of electron (anion and oxygen)
- Giver of proton (hydroxyl group)
- Acceptor of electron (aluminium cation)

Aluminium oxide is prepared from the calcination of the aluminium hydroxide, then cleaned with acidic solution and with methanol.
Then the phase is activated by heating at 800°C.
This phase is an alternative to silica when this one degrades the sample. It is used in normal phase conditions.
Neutral alumina is preferable for purification of non-ionizable products with polar fonction.
A basic treatment of alumina allows a better separation of anionic products.
An acid treatment of alumina allows a better separation of cationic products.

PF-15,30,50NH_2: Phase Amine (100Å, 300m^2/g)
This media is a silica end-capped with a primary amine functionality and can be used in normal or reversed phase conditions or HILIC or ions exchange.
In normal phase condition (organic non polar mobile phase), NH_2 media behaves as a relatively high polarity adsorbent and interacts with polar groups of compounds.
Loading of sample is lower than for Normal Phase (< 2%), depending on the resolution on the TLC.
Applications: Purification of polar compounds, Carbohydrates, Carboxylic and Sulfonic Acids, Polar organics compounds, Anions and Organic acids, Removal of TFA, Scavengers for acid chlorides, Basic compounds. (avoid to use a buffer which is difficult to evaporate)
Storage: Under 100% isopropanol immediately after each use.

PF-AC: Actived Carbon
Allows to discolor and take off unwanted products. Pre-packed columns are filled with actived carbon which provides a maximum absorption of impurities.
Application: take off by-products, colorants, impurities, catalysts, degraded reagents.

PF-50CN: Cyano
End-capped phase, with cyano bond, can be used in NP or RP mode.
In RP mode, CN columns are similar to C18 columns, even if the elution order can be different.
Polarity is between NH_2 and C18.
In NP mode (non polar organic mobile phase), CN phase has a different selectivity than NH_2 because of dipole-dipole interaction.
It is a good alternative for silica sensitive products.
Cyano columns are compatible with aqueous and organic solvents.
Applications: Separation of medium to high polar compounds (Anthraquinone, flavonoids,taxol, alcaloïds, natural and pigment dyes, amino acids, nucleosides, nucleotides, steroïds,vitamins,sulfonamides, benzodiazepines and derivated, nitrosamines, amino,
Storage: Under 100% isopropanol immediately after each use.

DIOL is less polar than NP silica, it is an alternative.
Selectivity is different compared to a virgin silica.
Such columns are compatibles with strong solvents (MeOH, Water), and can be used in NP or RP columns.
It is a good alternative to purify sensitive products as epoxydes which react with silica.
Loading capacity is less than NP (<5%)
Application: For Mid polar compounds, Proteines, peptides, steroids, hormones, Flavonnes, Phenols, amino-acids, nucleotides, vitamins.

Theorical comparison of 50, 30, 15µm column efficiency
N= Column efficiency
50µ=N
30µ=1,7N => $\sqrt{N}$=1,3
15µ=3,2N => $\sqrt{N}$=1,75
Rs=$\sqrt{N}$

Excessive flow rate during equilibration can generate overpressure.
To avoid this, we recommend controlling the flow rate with a flow gradient. Use the equilibration table delivered with the Interchim® flash columns. (Document available in the "technical tips" section of the catalog).

Columns	Key Words	Question
Flash	Flow rate, Optimum Flow rate	How to calculate the optimal flow rate of a flash column?
Flash	Frit	Can you provide details about frits of Flash columns?
Flash	Heat Rise	Why do Flash columns heat during equilibration?
Flash	HILIC-HIA	How to use HILIC-HIA columns?
Flash	Impurities	What types of impurities are present in the silica? And at what concentrations?
Flash	Ion exchange - anion - SAX	How to use Anion Exchange Columns?

Answer

Optimum flow rate calculation = 0.75 *(Diameter²/4.6²)

$D_{OPTI} = 0.75 \times \frac{Ø}{4.6^2}$

Interchim® use a gradient porosity frit technology. For every dimension of silica, a porosity gradient frit is optimized, to have the better diffusion without sample retention.

Causes:
- Solvent displaces air into the pores of silica
- Friction force
- Adsorption of the solvent on the surface of the silica (= heat of adsorption)

The more the solvent is polar, the more the temperature increases.

Consequences: Negative influences on
- The kinetics of mass transfer
- The retention
- The separation of compounds

The amount of heat generated depends on the particules size, flow rate and viscosity of the solvents.

Solution => Equilibration before the injection of the sample.
On rare occasions, the samples can give better separations on a dry cartridge when the compounds are slightly more polar and higher-grade solvent mixtures are used.
The heat factor becomes less important with better retained compounds that sometimes require a little more surface activity of the silica to separate well.

Application: Polar and water soluble compounds.
Cleaning: Rinse with 3-4 column volumes of the most eluting solvent, after every run.
Storage: under isopropanol, after rinsing with 4-5 column volumes.
Aqueous normal phase (ANP) separation of water soluble compounds. Typical mobile phase: water/AcN, MeOH/Water (>50%)
Many compounds are difficult to purify due to their polarity and strong solubility in water. These compounds are insoluble in most of normal phase solvents and are irreversibly retained on silica or alumina.Under reverse phase conditions, the compounds are poorly retained on C18.
The water forms a thin layer at the surface of the silica -> Hydrophilic interaction (almost ionic) with sample
Starting gradient: organic solvent (minimum 20%)
Ending gradient: Mixture containing water
Suitable solvents ANP: Acetone, AcN, IPA, EtOH, MeOH, THF
ANP is an alternative to reverse phase purification for highly polar compounds
Ex: eluent condition: 2CV 100% organic solvent, 10CV : 0% to 50% Water, 3CV 50% Water -> increase the proportion of the water in order to give hydrophilic character, elute polar compounds
Some alternatives to HILIC phase: Diol, Si, NH_2. The user can keep the same solvents used with Hilic to do a purification with Silica, Diol or NH_2. The selectivity can be different.
In some cases, the elution conditions will have to be slightly modified:
Firstly, try to do the purification in HILIC conditions with Diol, NH_2, Silica.
Secondly, if the separation is not optimized, try to modify the % of solvent to increase the resolution.

Silica impurities:

For IR-50SI	For PF-15SIHP
Ca: 100 ppm	Ca: between 1 and 10ppm
Na: 100 ppm	Na: 20ppm
Fe: 100 ppm	Fe: between 1 and 10ppm
	Al: between 1 and 10ppm
	Zr: 20ppm
	Ti: 50ppm

PF-50SAX: $Si\text{-}(CH_2)_3\text{-}N^+(CH_3)_3$
This phase is a quaternary amine.
The loading capacity is less important than for a normal phase (0.5-5%)
Exemple of solvents used: Hexane/AcOEt
Applications:
- Purification of organic acids (totally retained)
- It is possible to stack a SAX column on a normal phase column to hold acid products, the other compounds will be eluted.

Then, release the acid products by adding 5% of acetic acid in methanol.

Columns	Key Words	Question
Flash	Ion exchange - cation - SCX	How to use Cation Exchange Columns?
Flash	Peptides purification	Are there flash columns dedicated to peptides purification?
Flash	Polyamide	How to use polyamide columns?
Flash	Polymers, PSDVB	How to use PSDVB columns?
Flash	Porosity	How does porosity influence purification?
Flash, Prep	Acid Sites	How to block acid sites of silica?

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Answer

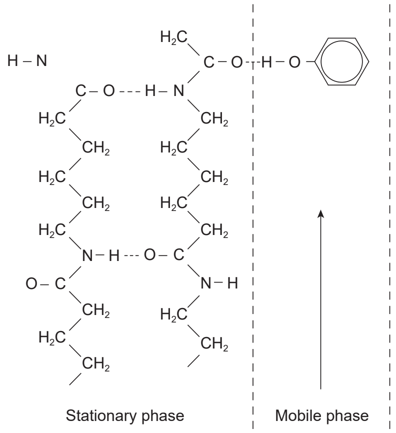
PF-50SCX
This phase is a bounded silica with tosic acid (strong acid)
The loading capacity is lower than NP (0,5-5%)
Example of solvents used: DCM/MeOH, Hexane/AcOEt
Applications:
Allows to purify basic compounds.
It is possible to isolate basic compounds (totally catched on the phase). Meanwhile, neutral and acidic compounds are eluted.
Then, release the basic compounds.
It is possible to stack a SCX column on Si columns. SCX column will catch basic products, the other compounds will be eluted.
Then basic products will be released by adding 5% of NH_4OH.

Interchim® propose Flash columns dedicated to peptides:
PT-15C18T
PT-15C18N
PFB-15C18T
PFB-15C18N
PT-15C18

Typical Loading is 2% (but depends on purification)

PF-100P6: Purification of natural substances with phenol groups, polyphenols and nitro.
Solvents used: AcOEt, Dichloromethane, Alcohol, Water.
Applications: Phenols, aromatic compounds, nitro and amino compounds, chalcones, flavonoids, DNP-amino acids
Storage: 2-3 CV of organic solvent 70-90% (Acetonitrile,MeOH,...)

Polyamide 6 as stationary phase for the separation of phenols



PF-X: PSDVB Polymers
Atoll™ X, 40µm - 800m²/g
Solvents used: Acetonitrile/water (7/1), water/MeOH. Acetonitrile or THF can be added to the mobile phase to increase performance.
Can be used with Dichloromethane, Cychlohexane, Chloroform.
Applications: extraction and preconcentration of non or slightly polar compounds, analysis in reverse phase.
Storage: 2-3 CV of 70-90% organic solvent (Acetonitrile, MeOH,..)
Do not clean with 100% water, leave a minimum 1% of organic solvent.
Advantages:
- Stability of pH: 1<pH<14 (ideal for basic compound)
- Less selective
- More important loading
- Specific surface more important than for C18 phase

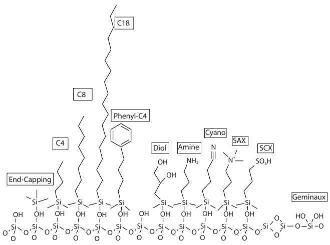
If the porosity decreases, the surface area increases.
For a specific application, it is advisable to use large pore silica, especially with biomolecules.

To block an acid site of virgin silica, use Triethylamine (0,1 to 0,5%) mixed to a solvent.

Columns	Key Words	Question
Flash, Prep	Bonded Silica	What are the different bonded silicas?
Flash, Prep	Dry-Load, Celite	How to realize a dry-load?
Flash, Prep	HILIC	How HILIC mode works?
Flash, Prep	Methanol	Can I use 100% methanol with silica?
Flash, Prep	Plates, theoretical plates, EHTP	Equivalent height of theoritical plate EHTP: How to compare?
Flash, Prep	Polarity	What is the evolution of the polarity of stationary phases, according to the bonds?
Flash, Prep	Retention	Retention mechanism in purification

Answer

Representation of graft stationary phases

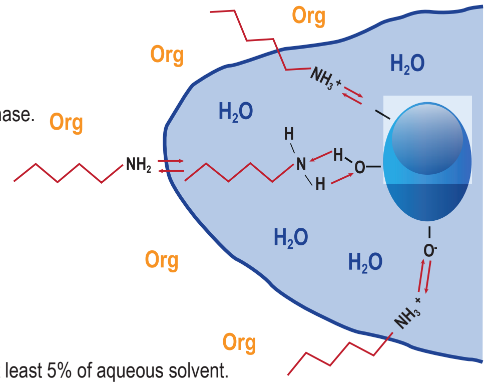


Interchim® recommend using celite for the dry-load. The advantage is that celite does not interact with the sample, and thus reduces the diffusion effect before the column. The efficiency is even greater.

Dilute the product in a solvent, add the celite (1:1 or 1:2), dry to adsorb the product, then introduce in the dry-load, and complete with celite or sand (to reduce the dead volume).

HILIC
Hydrophilic Interaction Chromatography
This is a chromatography where the stationary phase is polar and the mobile phase extremely organic with very low aqueous percentage.
- Analysis of very polar compounds
- Analysis of basic ionizable drugs, not separated in reverse phase.
- Development of more robust methods compared to grafted phases.
- Better sensibility on MS thanks to the high organic percentage of mobil phase.
- Easier preparation of sample (solubility).

The retention mechanism is based on:
- Polarity of analytes
- Degree of solvation
- Eventual ion exchange

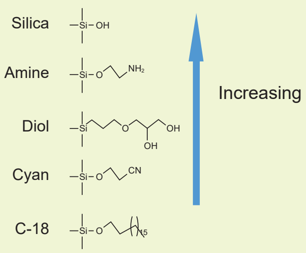


The mobile phase must contain a high proportion of organic solvent and at least 5% of aqueous solvent.
The organic solvent is a weak solvent, while the aqueous solvent is stronger.
For the utilisation on LC/MS, prefer volatile buffers.

It is possible to use 100% Methanol, the silica is not dissolved.

EHTP refers to the following parameters:
- calculation method (4sigma, 0,606h, Dorsey-Follet,…)
- instrument used (dead volumes)
- mobile phase
- sample
EHTP is comparable only in same conditions.

Stationary Phase Polarity

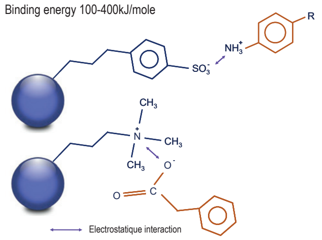


Mainly hydrogen link between compounds and silanols
The retention mechanism is based on 3 types:
- Silanol free
- Silanol link
- Silanol gemine

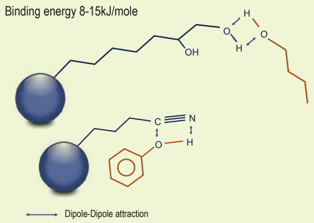
Columns	Key Words	Question
Flash, Prep	Retention mechanisms, Ion exchange	How do SCX or SAX interact with compounds?
Flash, Prep	Retention mechanisms, Normal phase	How do polar interactions work?
Flash, Prep	Transposition C18 TLC - Flash C18	Non-reproducible separation between TLC C18 and Flash C18. What to do?
Prep	Capacity - Loading capacity	What is the Loading capacity for a prep column?
Prep	Diameters	What are the different diameters available for prep HPLC columns?

Answer

Ion interaction SCX,SAX
Electrostatic attraction



Polar Interactions
stationary polar phase, apolar mobile phase



A) The behavior of the grafted phases can be very different between TLC and Flash purification:
The proportion of water in the mobile phase has a very important influence on the velocity of the mobile phase in TLC. The more the apolar graft is dense (short chains), the fewer are the remaining silanols on the surface, the lower is the speed. The hydrophobic repulsion of the grafting becomes more important than the capillary forces - In purification, this phenomenon does not exist, or is very limited, because of the use of a pump.
B) With C18 silica it is difficult to elute with a solvent which contains water.
Only a transposition from an HPLC column filled with the same Flash stationary phase avoids these problems.

The loading capacity is an important element of preparative HPLC.
Several factors can affect the loading capacity: the dimensions of the column and the specific surface of the stationary phase used.
Another factor affecting this capacity is the way the sample is introduced on the top of the column.
The sample enters the column into a spot which has the dimension of the internal diameter of the capillary 1/16 connection. If the sample is not evenly dispersed across the head of the live bed, overload regions are created when others are underloaded.
For example, if using a 50mm column i.d. and a connecting capillary of 500µm internal diameter without a distributor, then the sample will be focused on only 0.01% of the surface of the column head. This is obviously a huge loss of capacity. Not to mention that the column head clogs prematurely in the area of arrival of the sample, which will reduce the life time of the column.
To prevent this problem, our preparative columns are equipped with splitters whose design maximizes the dispersion of the volume and mass of the sample injected over the entire surface of the column head.

Prep columns are available as standard in internal diameters 10.0 - 21.2 -30.0 and 50.0mm. The lengths are 50 and 250mm (purification range from mg to g).

Columns	Key Words	Question
Prep	Dry-load HP	How to install a Dry-Load HP (High Pressure)?
Prep	Filters, In-line filters, columns saving	How to prevent the degradation of a prep column?
Prep	Inox tubes - Quality - Ra	What is the Ra?
Prep	Life time improvement	How to improve the life time of a prep column?

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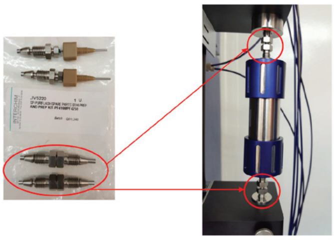
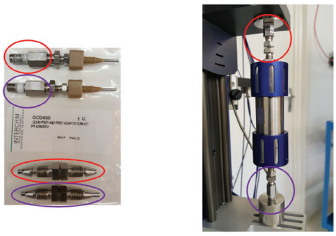
Answer

HP Dry-loads have Valco threads 5/16 "-24 for 1/8" OD tubes.

Installation on a puriFlash® 4250 or 4125 system (on the column support) requires the connectors contained in our JV5220 kit:



Installation on a puriFlash® 4125 system (on the pre-column support) as well as on the puriFlash® 215, 430 and 450 systems requires the connectors contained in our GO2400 kit:



To prevent the degradation of a prep column, the installation of an in-line filter in preparative column inlet with diameter 10 to 50mm is recommended.
Holder 21.2mm + filter 2µm reference CE4600.
Sintered replacement reference CE4620.
Use a 1/16 "-1/16" PEEK (T78560) or Inox (DT2800) coupler between the in-line filter and the column inlet for 10 to 30mm diameter preparative columns.
Use a 1/16 "-1/8" coupler (included in our JV5220 kit) between the in-line filter and the column inlet for 50mm diameter preparative columns.

The Ra, value of tube's surfacing, is very important in Preparative Chromatography. Measured electronically or optically, it represents the difference between peaks and the valleys of the tube surface. The more the Ra is low, the more the surface is smooth. The friction against the tube surface leads the mobile phase to move in laminary regime.
The molecules in the center of the flow move more quickly than those closer to the edges of the tube. It can induce an enlargement of peaks and a bad efficiency. To minimize this edges effect, the finished process of prep column fabrication is a key to their very high quality.
It makes it possible to obtain a surface of tube extremely smooth (The Ra is 8µinch), significantly reducing the edges effects and so increasing the efficiency of Modulocart Prep.

In order to improve the life time of the columns, we recommend to gradually increase the flow as well as the variation of the composition of the mobile phase during commissioning.
Example: with a reversed phase column 50.0mm diameter under ACN / H2O 70/30:
Composition of the desired mobile phase: ACN / H_2O 10/90; Desired flow rate: 120mL/min
Start gradually (5 minutes at 30mL/min ACN / H_2O 10/90, then 5 minutes at 60mL/min then 5 minutes at 90mL/min to finish at the desired flow).
To perform a gradient change during or at the end of the cycle, we recommend avoiding composition variations that are too abrupt.
Example: do not go from 120mL/min in ACN / H_20- (90/10) to 120mL/min in ACN / H_2O- (10/90) in a few minutes). A duration of 15-20 minutes for this change of mobile phase composition is recommended.

Columns	Key Words	Question
Prep	Loading capacity	How to overload?
Prep	Seal	Advice for seal
Prep	Transposition HPLC-Prep - Injected quantity	How to transpose the mass loaded, from an analytical method to a preparative column?
Prep	Transposition HPLC-Prep - Resolution	How to calculate the resolution, from a analytical mode to a preparative mode?

Answer

If concentration overload is generally preferable (within the solubility limits of the analytes in the chosen solvent) to volume overload, the latter remains simpler to implement.
The table below gives a very general idea of the quantities that can be reached in preparative chromatography. These indications are however not exhaustive. Depending on the compounds (their solubilities), the column resolution and the operating conditions, the indicated charges may be lower or greater.

ID Column	Standard flow rate	Loading for selectivity > 1.5	Loading for selectivity close to 1.2
4.6mm	1mL/min	3 to 20mg	0.5 to 3mg
10.0mm	5mL/min	20 to 100mg	5 to 20mg
21.2mm	20mL/min	100 to 400 mg	30 to 100mg
30.0mm	40mL/min	150 to 1000mg	50 to 150mg
50.0mm	12 mL/min	500 to 2500mg	100 to 500mg

The 1J8300 basic seal is made of FKM fluorocarbon (limited compatibility with DMSO).
For applications using this solvent we can offer a replacement seal Hifluor FKM, reference 1K0630.

m2 = m1 . (r2 / r1). (L2 / L1)

With:
Ray of analytica column: r1
Length of analytica column: L1
Injected analytica mass: m1
Ray preparated of column: r2
length preparated of column: L2
Injected mass preparated: m2

The goal is to purify the maximum amount of product in a minimum of injections. We will actually seek to increase the mass m2 by loading the column to the limit of resolution of impurities and the product of interest.

Rsprep = 1 /√Dp . L / U . Rsana

Analytic resolution:Rsana
Diameter of analytic paticules: dpana
Length of analytic columns: lana
Lineary speed of analytic column:uana
Injected analytic mass:m1
Resolution preparative:Rsprep
Diameter of preparative particule:dpprep
Length of preparative columns:lprep
Lineary speed of preparative column:uprep
Injected preparative mass: m2

with
L : lprep / lana , U : uprep / uana, Dp : dpprep / dpana

Module	Key Words	Question
Autosampler	CE	Is the Autosampler CE marked?
Autosampler	Connection	Can we connect the autosampler on a puriFlash® system already installed?
Autosampler	Contamination	Can the needle contaminate the sample?
Autosampler	Electrical power	What is the electrical power of the autosampler?
Autosampler	Injection Mode	What are the different ways to inject the sample with the autosampler?
Autosampler	Injection Volume	Which volume can we inject with AS?
Autosampler	Needles	Is the AS supplied with different needles?
Autosampler	Racks	Can we use Interchim® Racks with the autosampler?
Autosampler	Rinsing	What is the rinsing procedure with AS?
CarouXel	Columns	Wich columns can be used on a CarouXel?
CarouXel	Connection	Can we connect a CarouXel on a puriFlash® already installed?
ELSD (External)	Pressure, Flow rate	What pressure and what gas flow rate can we use with an ELSD?
ELSD (External)	Rinsing	Should I rinse my ELSD detector after each run?
ELSD (Integrated)	Solvent Carrier	Why do we have to use a solvent carrier with an ELSD detector?
General	Fluorinated solvents	Can I use fluorinated solvents with a puriFlash® system?
General	Leak Detectors	Are the puriFlash® systems equipped with leak detectors?
General	Nitric acids, acids	Is nitric acid compatible with puriFlash® systems?
General	Rinsing	Is it necessary to rinse the puriFlash® system?
General	Soda	Can I use soda with a puriFlash® system?
General	Solvent filters, strainer	Can I use solvent filters?

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Answer
Yes, the autosampler is CE marked.
Yes.
Theorically not: Before and after every picking-up, the needle is automatically rinsed.
Max power of the Autosampler is 68W. The Power of the syringe motor is 48W.
There are 2 different modes: - Standard Mode: the sample can be surrounded by two air bubbles, to avoid side effects with the mobile phase - Bracketing mode: used to add upstream and downstream of this sequence "bubble - sample - bubble" a solvent segment (DMSO) different from the carrier solvent or the rinsing solvent. At the ends of these two segments of solvents, is added an air bubble.
The injection volume depends on both the volume of the tube in the sampler rack and the injection loop on the injection valve (we can not put more sample volume than the loop can contain) If you want to make a large injection, you can play on the volume of the syringe, (syringe 10mL by default - 25mL syringe optional). It is also possible to do several filling cycles with the syringe.
By default, the autosampler has a beveled needle, but a flat-bottomed needle can be installed as an option.
Yes, the autosampler is designed to use all puriFlash® racks.
Different rinsing procedures: - Independent rinsing station - External bottle for rinsing solvent - Additionnal port for bracketing solvent
It is possible to use columns from F0004 to F0330 format
Yes.
2 to 2.3L/min with a pressure of 2 bar.
Yes, after each purification, cleaning the DEDL is essential. The DEDL must be purged with isopropanol by using the predefined method "ELSD Nebulizer cleaning" (lasts 4 minutes). When the signal on the DEDL is stable, you can stop the purge.
ELSD is a destructive detection mode. Interchim® therefore uses a solution on its systems that consists in dividing the stream (Solvent + Sample) in order to reduce as much as possible the quantity of product lost. In addition, the sample is pushed to the nebulizer with isopropanol which at the same time allows the system to be cleaned. This prevents the products from crystallizing.
The puriFlash® systems are compatible with fluorinated solvents (methyl nonafluorobutyl ether or methyl nonafluoroisobutyl ether). However, rinsing the system with isopropanol is essential.
Yes, leak detectors are available by default on all the modules of the new generation 5 of the puriFlash® systems: pump, fraction collector, detector.
The puriFlash® system can work up to 25% nitric acid. A weak acid like ethanoic acid does not cause any problem.
Yes, after each purification, a cleaning with the most eluting solvent of the purification is essential to eliminate any product remaining in the system. Then, a conditioning of the apparatus with isopropanol is recommended in order to avoid miscibility problems between the next and the previous purification.
To use soda is possible, but it is recommended to rinse the pistons of the pump with water, and do not let the soda stagnate on the pistons. You can create a last step in your method to rinse the system.
It is not advised to use solvent filters. Cavitation phenomena may appear, thus disturbing flow accuracy and gradient accuracy.

Module	Key Words	Question
General	THF	Is THF compatible with puriFlash® systems?
Mass	Calibration peaks	There are still some calibrant peaks. How to remove them?
Mass	Cleaning, Source	How to clean the source?
Mass	Gain	Can we adjust Mass gain during autotune?
Mass	Injection	When we inject on the mass with FIA, which sample concentration must we use?
Mass	Pressure, Flow rate	What pressure and which gas flow rate should be used for the mass spectrometer?
Mass	Sensitivity	How can I increase the sensitivity of my CMS?
Pump	Accuracy, Precision	What does accuracy and precision mean?
Pump	Acetic acid, Ammonia	Can we use acetic acid or Ammonia with a puriFlash® system?
Pump	Belt	What material the pump belt is made of?
Pump	Buffers	Can we use salt buffers with the puriFlash® systems?
Pump	Flow rate	Why is my flow rate higher than expected?
Pump	Mixing Chamber	What material the mixing chamber seal is made of?
Pump	Pistons	What material the pistons are made of?
Pump	Seals	What material the pump head seals are made of?
RI Iota 2	Cleaning	Do we have to clean the cell of the RI?
RI Iota 2	Equilibration	Is there a particular way to equilibrate the column with a RI?
RI Iota 2	Maintenance	Does the optical block need maintenance?
RI Iota 2	Mix of solvents	How to proceed with the RI when we use a mix of solvents?
RI Iota 2	Position	How to position the RI if we use other detectors?
RI Iota 2	Procedure	What are the good operating procedures for a RI detector?
RI Iota 2	Procedure	What to do, if we want to use the RI after a long unused time?
RI Iota 2	Pulsations	How to avoid pulsations of the RI signal?

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Answer

PuriFlash® systems are compatible with THF. But we do not recommend to store the device under THF.
You must rinse the device with isopropanol.

It is necessary to rinse 2h with acetonitrile and / or MeOH to eliminate all the calibrant. If there are still traces, try to put the tube back in the calibrant bottle so that it is no longer in contact with the liquid. If the problem persists, it means that there is calibrant stuck in the system. It is probably necessary to change a check valve or contact the After Sales Service.

Clean the source with 1-3% formic acid (soak in a beaker and then in an ultrasound bath for 30 minutes).
Clean the cone with MeOH and specific cloth.

During an autotune, the gain of the detector is not regulated. It is good to check the intensity of a control compound during installation and to read the detector gain value. When we see the sensitivity decreasing (on average after one year) it is necessary to manually increase this gain and re-record the tune.

The concentration must be 5-20µg/mL. Too much concentration can interfere with ionization.

5.5 bar and 10L/min Nitrogen.

- Reduce the range of TIC.
- Decrease the split ratio, decrease the make-up or dilution flow rate.
- Decrease the cappilary temperature.

In the fields of science, engineering, industry, and statistics, the accuracy of a measurement system is the degree of closeness of measurements of a quantity to that quantity's actual (true) value.

The precision of a measurement system, related to reproducibility and repeatability, is the degree to which repeated measurements under unchanged conditions show the same results.

Yes, we can use acetic acid or Ammonia with a puriFlash® system.

The pump belt is made of Polyurethane and nylon.

Yes, but it is essential to use the washing discs supplied with the system to avoid crystallization at the back of the pistons which would damage the seals.

With low flow rates (<1.5mL/min) without any column (backpressure), it is possible that the solvent is siphoned, disrupting the measurements. If a column (or more generally a back pressure) is installed, the flow becomes correct again.

The Mixing chamber seal is made of PTFE.

Pistons are made of ceramic.

Pump head seals are made of PTFE charged with graphite carbon, thus extremely resistants to solvents.

The cleaning of the cell is to be done very rarely, unless there is a significant decrease in sensitivity.
The materials used for the block are stainless steel, teflon and quartz.

We recommend to equilibrate the column at least one hour before the IOTA is started. Indeed, the RI is dependent on the temperature, and during equilibration the column heats up.

No. The optical unit needs no maintenance or adjustment.

If you use a mix of solvents, it is recommended to mix them in a bottle before starting the run.

Never put another detector in serie behind a refractometer. If multiple detectors are used, the refractometer must always be put in last position.

Before using RI detector, let it a while in the room, in order to stabilize the temperature of the detection part (minimum half a day).

In case of prolonged shutdown of the device it is necessary to rinse carefully the measurement and reference circuits.

The check valves of your pump must be clean, otherwise you will see pulsations on the chromatogram.

Back to SUMMARY

Module	Key Words	Question
Unit Control	Remote Control	Is it possible to remote control the system?
Unit Control	Touchscreen	What is the technology of the puriFlash® touchscreen?
UV Detector	Baseline	What can be the reason for a non-constant baseline?
UV Detector	BPR Back Pressure Regulator	Where should the BPR (Back Pressure regulator) be placed?
UV Detector	Flow Cell	Is it possible to change the UV flow cell?
UV Detector	Flow Cell, Cleaning	How to clean the UV flow cell?
UV Detector	Flow cell, specifications	What are the specifications of the UV Flow cell?
UV Detector	SCAN	What is the entire scale for the SCAN function?
Valves	Loops	What are the different loops available with puriFlash® systems?

Answer
Networking and remote control of puriFlash® systems is possible. It is the customer's responsibility to network the puriFlash®.
It is a capacitive touchscreen.
A non-constant baseline can be induced by solvents with a high rate of dry residue. Solvents with a high residual content after evaporation, or with non-volatile stabilizers, can cause disturbances along the entire baseline (not only on peaks). Thus, they increase both the height of the baseline and the background noise.
The BPR is inside the device, and is placed between the UV cell outlet and the fraction collector inlet.
Yes 3 differents flow cells are available: 0.3mm 45µL 1.3mm 55µL 2.4mm 70µL
It is possible to clean the UV cell with formic acid, then rinse with water to remove acid, and use Isopropanol to stock it.
Max flow rate 500mL/min. Max pressure 20 bar.
The SCAN function is now available for all wavelengths from 200nm up to 800nm.
Injections are possible from 500µL to 50mL. 2 kits are available for standard injections, and large injections.

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Numerical index

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D >

E >

F >

G >

interchim®

O >

P >

R >

interchim®

Alphabetical index

General Terms and Conditions of Sale

Applicable from April 1st, 2018

1. General rules

Interchim® sells exclusively to the trade and does not accept orders from private individuals. These Terms and Conditions are issued to all new customers with their first orders. These General Conditions of Sale are deemed as being accepted by the customer for the first and all subsequent orders unless objections are raised within 7 calendar days. Unless agreed otherwise in writing, the placing of an order by the customer implies the automatic and formal acceptance of these General Conditions of Sale.

No variation of these terms and conditions found on purchase orders, letters, acknowledgement of orders or other documents issued by the customer will unless agreed to in writing by Interchim.

Any clause departing from or adding to these terms and conditions of sale will be binding upon the customer unless the latter formally questions the changes (in writing).

2. Purchase orders

Customers can place their orders in writing, by fax, e-mail or telephone: Hot-Line: Interchrom (+33) 4 70 03 73 09 Interbiotech (+33) 4 70 03 73 06 Interbulk (+33) 4 70 03 73 01. Telephone orders will only be accepted if the customer's order number is given, and these must then be confirmed in writing. Interchim is entitled to refuse a sale to the customer if: the final recipient, the intermediaries, and/or the haulage contractors fail to abide by the legislation and/or regulations, applicable in France or in the country of purchase and/or sale.

3. Pricing

Due to fluctuations in manufacturers pricing and exchange rates, all prices are indicative and subject to changes without prior notice.
Export shipment costs are upon weight and size of the parcels
Prices are excluding of tax.
They are EX WORKS Montluçon.
The minimum order is 100€ before tax.
Interchim will charge an extra fee of 15€ for any orders < 150€ before tax.
Interchim will charge 37€ before tax for Dry Ice.
Specific packaging for dangerous items will be charged at 8€ before tax.
an additional 22€ may be charged for bank fees for export orders
A line of invoicing overloads with fuel will be applied in repercussion of the overloads fuels charged by the carrier.
Some shipments will be invoiced specifically according to the quotation remitted to the client (bulk, heavy or dangerous material, export, etc.). These items will be shipped using via the best possible method chosen by Interchim according to the nature of the shipment and safety regulations.
Orders concerning other specific services or any other products not listed in Interchim's price list will be invoiced according to the quote given. The offer is valid 60 days from the acknowledgement of receipt of the order.

4. Payment

Unless written approval of Interchim financial services:
- Terms of sale for supplies, consumable parts, accessories, are cash.
- The settlement of instruments and devices: a deposit of 30% excluding tax will be payable in advance and the balance before shipment.

The customer's first order must be paid in advance, without discount.
No discount is granted for early payment.
In case of partial shipments, corresponding invoices must be paid in full without waiting for the balance of the order. Payment time limits start as soon as part of the order has been received. The customer can however refuse any kind of partial shipment.
No complaints about the invoice will be accepted beyond the first 15 days of the date of invoice.
Any amount not paid by the customer within the due date mentioned on the invoice will entail the immediate settlement of the other amounts due, whether they be drafts or bills of exchange.
If a customer has, for a previous order, failed to respect the terms of sales (i.e. no payment, or payment overdue), Interchim can refuse to sell, unless the buyer provides a satisfactory guarantees and/or pays cash, for which no discount will apply.
a fixed compensation of 40 euros for recovery costs will be perceived for non-compliance with payment deadlines
Late payment penalties: As per article L441-6 of the French Code of Commerce, penalties are due as of the day following the due date of the invoice. These penalties are due without any notice being required. The interest rate for these penalties is three times the legal rate of interest per month.

5. Packing shipment and damage in transit

Unless stated otherwise, the goods are packed by Interchim, and Interchim will alone choose the means of packing according to the goods, the type of transportation and storage. Products in stock are shipped immediately upon receipt of the order. Interchim cannot be held liable for late delivery.
The buyer shall bear all risk of loss or damage in transit.
The buyer must inspect the goods immediately upon receiving them and if needs be contact the carrier within 48 hours by registered letter with acknowledgement of receipt, for any shortage, defects or damage.

6. Deliveries

Delivery times are given for information only and are not guaranteed. Any delays in delivery shall not give the Customer the right to cancel the sale or to refuse the goods. Delays do not give any right to withholdings, offset, penalties or damages.

7. Return policy

Goods may not be returned for credit without Interchim's approval. Any returned items must be wrapped in their original packaging without changes to the original marking (including labels). The customer is civilly and criminally liable in the event of the returned product being altered by chemical or biochemical or biological or any other materials or for any other alteration which could endanger any third party or any member of Interchim's staff.
Unless Interchim is responsible for the error in shipment, all freight and carriage costs must be paid by the customer.
Interchim will charge 20% of the amount of the product for restocking with a minimum amount of €45. (These charges include: non-recoverable paid Customs duty, bank charges, return costs to the original supplier and their own restocking costs).

8. Ownership clause

Interchim® expressly reserves the ownership of the products it delivers until the sale price and any interest, costs, accessories are paid. In this respect, any drafts, cheques or any other instruments bearing an obligation to pay, shall not be considered as payment within the meaning of the above condition. Payment will only be considered as settled once Interchim has received the actual invoiced amount. In case of non-payment of any due amount, Interchim may claim return of the products. In the event of the unpaid products being resold, the customer agrees to transfer to Interchim, upon request by the latter, the accounts receivable from its customers, up to the amount still due to Interchim®.

9. Resolutive clause

Should a customer fail to comply entirely or partially with any of its obligations, should it fail to respect the due date for payments, Interchim may, as it wishes, decide to accelerate the payment process and consequently require immediate payment of all outstanding amounts owed for whatever reason and/or decide to suspend any deliveries and/or terminate any agreements in progress.
The cancellation of agreements will require no legal proceedings and will take effect at the end of the first 8 days after the customer has received notice to pay by registered mail with acknowledgement of receipt. This notice will mention the intention to apply the present clause without prejudice to any other rights of Interchim.
In the event of the invoking of this resolutive clause, Interchim or its representative is expressly entitled to enter the customer's premises to reclaim the products relating to the clause.

10. Governing law

These terms and conditions of sale as well as any agreements made in application are governed by the laws of France and excluding the Vienna Agreement of 11 April 1980 related to contracts for the international sale of merchandise.
All disputes as to the interpretation, the application of the terms and conditions of sale and any agreements signed with a customer shall be subject to the exclusive jurisdiction of the Commercial Court of Montluçon.

11. Case of absolute necessity

Interchim's responsibility will not be involved, should a case of absolute necessity arise. The enforcement of the obligation will be delayed until the case of absolute necessity is cancelled. If the absolute necessity instance continues for longer than 2 months, the agreement can be interrupted on request by one or the other of the two parties without any compensation to any party.

12. Risks in use of products

With the exception of pharmaceutical products sold to the Pharmaceutical Industry, all of our products are solely intended for research purposes and must not, in any case, be used as medicine, cosmetics, pesticides, nor for farming uses, food additives nor as cleaning agents.
They must be handled by competent persons with the usual care, in accordance with the information given.

13. Dangerous and toxic products

Information on stabilities or toxicities is given by our producers subject to their own liability, including in case of false toxicity characteristics or classes. The absence of a warning must not be considered as a proof of safety; we would remind you that for many chemical, biological or biochemical substances there is no appropriate information available about possible risks. Consequently, it is the customer's duty to check the level of hazard and to carry out all necessary investigations to determine the hazards arising through the use of the products bought from Interchim. Dangerous products are not listed as such in the catalogue. The customer is wholly responsible for checking the nature of the risk inherent in the dangerous goods. It is also the customer's duty to inform its own customers and intermediaries (carriers, forwarders, packers) of the risks inherent in the use and/or handling of the products.

14. Warranties

The warranty only applies to the repair or replacement of those products that have a latent defect or a compliance defect, excluding any other compensation for whatever reason. The warranty does not apply to the defects, to the failures or to the damage due to a misuse, carelessness or a defective maintenance as in case of normal wear and tear of the good or in case of strength major.
The product must be returned to Interchim or the carrier in its original condition in its original packaging. The customer must comply with Interchim's instructions for product returns; as per Article 7.

15. Environnement

An Ecotax will be applied in accordance with the Directives of the DEEE, in accordance with the applicable laws relating to electrical and electronic equipment marketed after 13 August 2005. The organisation, collection and destruction of the products remain the responsibility of the final user. Interchim will pay the tax collected to the relevant approved recycling organisations.

16. Changes to the general terms of sales

Interchim reserves the right to change these General Conditions of Sale at any time and any such changes shall be applicable to all orders placed after the date of the modification, including for orders supplementary to or associated with previous orders.

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