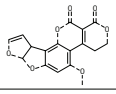
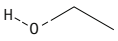
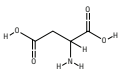
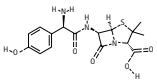
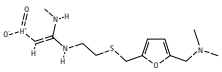
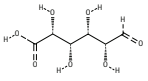
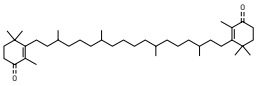
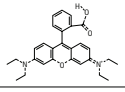
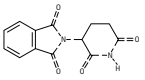
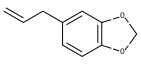
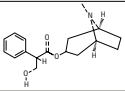
Column selection guide

This column selection guide will help to select the most suitable column for a specific application:

1 | Selection by chemical structure of the analyte
2 | Selection by stationary phase
3 | Selection by sorbent specifications
4 | Selection by column dimension
5 | Selection by USP classification

1 Selection by chemical structure of the analyte with the log *P* value*

The selection of a most appropriate stationary phase very much depends on the chemical structure of the compounds to be separated. One important parameter, that describes the chemical structure of a compound is the log *P* value*. This table shows the log *P* value* of representative compounds of important analyte groups.

	Analyte group	Example	Structure	log *P* value*
A	Aflatoxins	Aflatoxin G1		1.8
	Alcohols	Ethyl alcohol		–0.1
	Aldehydes	Benzaldehyde		1.5
	Alkaloids	Quinine		2.9
	Amino Acids	Aspartic acid		2
	Antibiotics	Amoxicillin		–2
		Ranitidine		0.3
	Aromatic amines	Aniline		0.9
C	Carboxylic acids	Glucuronic acid		–2.3
	Carotinoids	Canthaxanthin		11.4
D	Dyes	Rhodamine		4.4
E	Enatiomers	Thalidomide		0.3
	Essential oils	Safrole		3
	Esters	Atropine		1.8

*** log *P* value**
The partition coefficient is a ratio of concentrations of un-ionized compound between the two solutions octanol and water. To measure the partition coefficient of ionizable solutes, the pH of the aqueous phase is adjusted such that the predominant form of the compound is un-ionized. The logarithm of the ratio of the concentrations of the un-ionized solute in the solvents is called log *P*. The log *P* value is also known as a measure of lipophilicity.

$$\log P_{oct/wat} = \log \left(\frac{[solute]_{octanol}}{[solute]_{un\text{-}ionized\ water}} \right)$$