Cogent TYPE-C™ Silica for Organic Normal-Phase (ONP) HPLC

VALUE PROPOSITION:

Improve your method development, run time and column lifetime by using Cogent TYPE-C silica-hydride technology. Get the competitive edge in your industry and make an impact on your company's bottom line by lowering the cost of analysis and possibly providing 'greener' applications by taking advantage of the time and solvent savings these columns can provide. Cogent™ columns bring modern technology to your lab for less money, while making challenging separations more robust and reliable. Using these columns is simple. The on-boarding process and lifetime support makes bringing them to the lab a smooth (even enjoyable) and scientifically valid process.

Background: In ordinary normal-phase chromatography, sample mixtures are separated into their components by adsorption/desorption of the analytes on to a polar stationary phase, using a non-polar or moderately polar mobile phase. The rate at which individual solutes migrate through these columns is mainly a function of their polarity. For normal-phase on ordinary silica a 100% organic solvent is typically used. In this system, the least polar analytes elute first, whereas the most polar analytes have strong interactions with silanol groups and elute last.

Normal-phase separations have typically been performed on ordinary Type B unbonded silica or bonded phases, such as cyano or amino. Unbonded silica supports are hygroscopic in nature and retain water quite strongly. Water is adsorbed by organic solvents to varying extents, depending on atmospheric conditions and type of solvent used. Therefore, Type B silica can adsorb water from the mobile phase due to the presence of the free silanols, to create a 'hydration shell'. As the water content increases, the analyte retention times can change, resulting in longer equilibration times and lack of reproducibility. In such analyses, measures need to be taken to tightly control the water content of the mobile phases.

This problem is overcome by the use of Cogent TYPE-C silica phases, as the lack of silanols and the silicon-hydride groups (Si-H) on the silica surface virtually eliminates the adsorption of water avoiding the resultant 'hydration shell' which is very difficult to manage. This makes them an excellent choice for Organic Normal-Phase, enabling greater speed and a wider range of solvents to be used. The weaker water adsorption also accounts for the little or no hysteresis observed when changing from ONP to ANP or RP.

Application Areas:

Normal-phase HPLC may be used for the analysis of polar analytes such as amines, acids, metal complexes, isomers and water labile compounds and fats.

Advantages of TYPE-C Silica for Organic Normal-Phase HPLC

- **No significant hydration shell**
  The lack of silanols minimizes the adsorption of water, making chromatography more reproducible
- **Suitable for preparative HPLC**
  Solvents easy to evaporate. Greater stability and reproducibility
- **Fast column equilibration**
  Reduces solvent consumption therefore "greener"

Method Development Strategy for Organic Normal-Phase HPLC

STEP 1.	Run a gradient of hexane with 5% to 95% ethyl acetate.
STEP 2.	Modify the gradient to improve component resolution or develop an isocratic separation.