Bonded Phase Functionality for Cogent TYPE-C Silica HPLC Columns - Tech Information

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What Is the Purpose of Different Bonded Phases on Cogent TYPE-C™ Silica?

On Cogent TYPE-C™ silica-hydride columns, the bonded phase you choose (e.g., C18, Cholesterol, C8, C3, Phenyl, Diol, Undecanoic Acid, etc.) directly shapes how the column behaves in Reversed-Phase (RP) and Aqueous Normal Phase (ANP) modes.

In general, with little or no surface modification, ANP retention is stronger than RP under the same method conditions; as the bonded group size, surface coverage, and carbon load increase, the column expresses more pronounced RP behavior.

How to use this in method development

- If your target analytes are polar/ionizable and you want ANP selectivity, start with minimally modified TYPE-C™ phases (e.g., silica-hydride or lightly bonded chemistries) and a high-organic/low-water gradient typical for ANP. Expect stronger ANP retention in this regime.
- If you need classic RP behavior (hydrophobic interaction, water-rich elution increasing retention), select more heavily bonded phases (e.g., C18, Cholesterol) where higher carbon load and surface coverage shift the mechanism toward RP.

Practical implications

- Selectivity tuning: Switching from a lightly bonded TYPE-C™ phase to a higher-carbon-load phase can increase hydrophobic interactions and alter elution order in mixed analyte sets.
- Mechanism steering: Keeping method conditions constant, your bonded phase choice is a direct lever to emphasize ANP (light/none) vs RP (heavier) behavior.
- Column family consistency: Because these are all TYPE-C™ surfaces, you can explore RP ↔ ANP selectivity within the same column family, minimizing re-validation effort. (See CRC entries on ANP setup for deeper background.)

  Rule of thumb: Less bonding → more ANP-dominant behavior; more/larger bonding and higher carbon load → more RP-dominant behavior.

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