

## TYPE-C Silica Columns Are Not Hybrid Particles - Tech Information

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### Are Cogent TYPE-C™ Silica Columns Packed with Hybrid Particles?

**Short answer: No.** Cogent TYPE-C™ silica columns are not hybrid-particle columns. They are built on high-purity, base-deactivated type-B silica that has been surface-modified to create a stable, unique chemistry—notably one that does not retain water the way conventional silica does.

This surface enables multiple chromatographic mechanisms on a single platform: Reversed Phase (RP), Normal Phase (NP), and Aqueous Normal Phase (ANP). The modification process was invented by Professor Joseph Pesek et al. and is supplied exclusively through MICROSOLV.

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### What “Hybrid Particles” Usually Means (and Why TYPE-C Isn’t That)

In HPLC parlance, “hybrid” particles typically refers to silica co-condensed or composited with another matrix (e.g., organosiloxane/organic components) to improve mechanical or pH stability. TYPE-C takes a different route: it starts with type-B silica and applies a proprietary surface modification that fundamentally changes the surface energetics and hydration behavior without becoming a bulk “hybrid” material. This is why TYPE-C is described as modified silica, not a hybrid particle.

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### Why the TYPE-C Surface Matters in Practice

- Reduced water retention at the surface → helps enable ANP methods where increasing water can decrease retention for certain analytes, a hallmark behavior of the TYPE-C family.
- Mode flexibility (RP, NP, ANP) → you can explore different selectivity regimes without changing the underlying column family, simplifying method scouting and transfer.
- Unique selectivity → the modified surface can yield distinct interaction profiles versus fully hydroxylated silica, aiding tough separations that resist conventional approaches.

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### Typical Use Cases You’ll Recognize

- RP methods where you want conventional hydrophobic interactions but benefit from TYPE-C’s surface characteristics.
- ANP methods for polar/ionizable analytes where water content can inversely affect retention, offering a powerful complement to RP. (See related CRC entries describing ANP behavior on TYPE-C columns.)

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**Bottom Line:** Cogent TYPE-C™ columns are not hybrid particles. They’re modified type-B silica with a distinct, water-nonretaining surface that supports RP, NP, and ANP mechanisms—technology

originated by Prof. Joseph Pesek et al. and manufactured by MICROSOLV



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**MicroSolv Technology Corporation**

9158 Industrial Blvd. NE, Leland, NC 28451

Tel: (732) 380-8900

Fax: (910) 769-9435

Email: [customers@mtc-usa.com](mailto:customers@mtc-usa.com)

Website: [www.mtc-usa.com](http://www.mtc-usa.com)