

## Cleaning Cogent TYPE-C Silica Based HPLC Columns - Tips and Suggestions

*Date: 12-APRIL-2012 Last Updated: 7-FEBRUARY-2026*

Cogent TYPE-C™ Silica-based HPLC columns—including the Diamond Hydride™, Silica-C, and other TYPE-C phases—are engineered for robustness, reproducibility, and longevity.

Proper cleaning, conditioning, and pH management are essential to maintaining column performance and preventing premature degradation.

The original guidance outlines recommended solvent systems, pH restrictions, and conditioning steps specific to TYPE-C columns. These recommendations are expanded below for clarity and best-practice integration.

### 1. Routine Cleaning Between Runs

Cogent TYPE-C™ columns tolerate a wide range of organic modifiers and can be washed between injections or between batches using the following solvent systems:

#### Recommended Standard Cleaning Solvents

- 50% isopropanol / 50% DI water
- 50% methanol / 50% DI water

These mixtures effectively remove:

- Polar residues
- Weakly retained analytes
- Matrix contaminants

Because TYPE-C Silica phases exhibit both ANP and RP-like retention behaviors, these mixtures help clean across a broad polarity range.

### 2. Cleaning for Hydrophobic Sample Residues

For more hydrophobic or strongly retained organic contaminants, stronger solvents are recommended:

#### Enhanced Cleaning Options

- 50% isopropanol / 50% acetonitrile
- 100% methanol (when appropriate)

These higher-organic rinses more effectively solubilize hydrophobic analytes and remove residues that might otherwise appear as ghost peaks or baseline drift.

### 3. Critical pH Precautions

Cogent TYPE-C columns have a specified safe operating pH window:

**Maintain Mobile Phase pH:  $\geq 2.0$  and  $\leq 7.5$**

Exceeding this range may cause:

- Silica dissolution
- Loss of efficiency
- Increased backpressure
- Irreversible void formation

Consistent pH control also prevents interactions between incompatible buffer systems (e.g., acids vs ammonium salts).

### 4. Proper Conditioning Procedure for New Diamond Hydride™ Columns

Before first use, Diamond Hydride™ columns must be conditioned to hydrate the silica-hydride surface and stabilize ANP/RP retention mechanisms.

#### Required Conditioning Steps

1. Flush column overnight at 0.1 mL/min with:
2. 50:50 methanol / DI water
3. The next day, switch to your intended mobile phase.
4. Equilibrate for 30 minutes before beginning analytical runs.

This process restores the surface to its optimal state, ensuring excellent retention reproducibility and peak shape across many injections.

### 5. Important Buffer Compatibility Warning

Columns previously used with acidic additives (e.g., formic acid) should not later be used with ammonium salts, and vice versa.

#### Recommendation

If you require both buffer types in your workflow—

→ Use two separate columns.

This prevents unpredictable retention shifts caused by semi-permanent surface chemistry changes.

### 6. Summary of Best Practices

#### Do:

- Clean with 50% IPA or 50% MeOH mixtures
- Use 50% IPA / 50% ACN for hydrophobic residues
- Condition new columns overnight at low flow
- Keep pH strictly between 2.0–7.5
- Dedicate separate columns for acid vs ammonium buffers

#### Avoid:

- High-pH (>7.5) exposure
- Switching between incompatible buffer systems on the same column
- Short equilibration times after mobile-phase changes

Following these procedures ensures long, stable performance consistent with TYPE-C™ silica technology.



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