

Conditioning Procedure for a New Diamond Hydride HPLC Column - Tech Information

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A Cogent Diamond Hydride™ column only needs to be fully conditioned once—when it is new. Additional “re-conditioning” is rarely necessary under normal analytical use. But to guide technical users more effectively, here is a deeper explanation of *why* that is the case and when exceptions arise.

1. Initial Conditioning Is Required Only Once

Each Diamond Hydride™ HPLC column includes a package insert describing the proper initial conditioning procedure, which stabilizes the silica-hydride surface and prepares it for both Aqueous Normal Phase (ANP) and reversed-phase–like retention.

This process typically involves:

- Controlled flushing at low flow
- Hydration and equilibration
- Adjusting to your chosen mobile phase environment

Once completed, this process does not need to be repeated unless a specific issue arises.

2. Why Continuous Conditioning Is Not Needed

Diamond Hydride™ (TYPE-C Silica) is designed for high stability and surface robustness, so daily or routine conditioning does **not** improve performance. Under standard laboratory operation:

- The stationary phase maintains its ANP/RP-like balance without special treatment
- Retention reproducibility remains stable after initial setup
- Frequent wash cycles do not add benefit and may be unnecessary downtime

3. Situations Where Additional Conditioning *May* Be Needed

Although routine conditioning is unnecessary, certain situations may call for additional flushing or mild re-equilibration:

A. Sample matrices with high organic load or particulates

If injected samples are not well filtered or contain matrix components that bind strongly, the column may need cleaning, not conditioning.

B. Switching between incompatible buffer systems

For example, switching between:

- Strong acids and ammonium salts
- Formic acid systems and acetate systems

- These may require extended equilibration, though this is not the same as initial “conditioning.”

C. After a severe method deviation

Examples:

- Column run dry
- Exposure to pH outside the recommended range
- Abrupt solvent switching without proper blending

These unusual events may require slow flushing and equilibration but still do **not** constitute a full re-conditioning cycle.

4. Routine Operation Best Practices

To preserve column performance without unnecessary downtime:

- Filter all samples to prevent buildup on the frits
- Use appropriate diluents matching your solvent system (especially in ANP)
- Avoid sudden solvent changes
- Store column properly when not in use
- Use guard columns for high-matrix workflows

Following these practices minimizes contamination and prevents the need for repeated conditioning.

5. Summary

- Diamond Hydride™ columns only require initial conditioning once.
- Routine conditioning is not required under normal conditions.
- Additional flushing is necessary only when method conditions, sample quality, or solvent transitions justify it.
- Proper sample prep and consistent mobile phase conditions ensure long-term, stable performance.

[Diamond Hydride HPLC Column Ordering Information](#)



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