

Restek UHPLC Columns

Thank you for purchasing a UHPLC column from Restek Corporation. Restek UHPLC columns are specially designed for higher pressure operation (up to 1,000 bar, or 15,000 psi) and contain silica-based, high purity spherical packings in a 1.9 μ m particle size. Each column is individually packed and tested to ensure superior performance. The enclosed quality assurance report contains a test chromatogram and important performance data specific to your column. It also includes the column serial number and the lot number of the packing material. Please retain this information, as it will prove invaluable in the event that troubleshooting is required.

Column hardware

All column hardware is 316 stainless steel. The end fittings are compatible with all UHPLC systems; however, it is important to make sure that the column connectors are correctly seated. Please refer to your UHPLC system's operations manual for instructions regarding installation of the column.



Connecting the column to your UHPLC system

Your column is shipped with PEEK™ end plugs; simply loosen the plugs and remove before installation. The column contains the storage solvent indicated on the enclosed quality assurance report. Be sure that your intended mobile phase is compatible with this solvent. If it is not, you must flush the column with an intermediate solvent that is compatible with both the shipping solvent and your intended mobile phase. Please contact our Technical Service chemists if you are unsure of solvent miscibilities. Be especially careful if you will be using a buffer, because the shipping solvent for most columns contains more than 50% organic solvent, and contact with a buffer could cause a precipitate to form, plugging the column.

Flow direction

The arrows on the column label indicate the flow direction. Begin by connecting the inlet end of the column to the injector or autosampler and allow the mobile phase to flow from the outlet end of the column into a beaker for 10-15 minutes, gradually increasing the flow rate to its optimum value. Then, stop the mobile phase flow and connect the column to your detector.

Because every UHPLC system is unique, especially when used in gradient mode, your results might differ from those obtained in our laboratory. A call to our Technical Service chemists will assist you in optimizing your separations.

Record the operating pressure! Continuous monitoring of system pressure will alert you to changes that might require you to perform maintenance, such as washing the column or changing filter frits.

Column lifetime

Restek column packings are based on silica particles. The pH limitations of these materials can be found in the most recent Restek catalog, or at www.restek.com. Extended use of the column at extremes of pH could shorten the lifetime of the column. We recommend an upper temperature limit of 80°C. Temperatures above this limit might improve efficiency by lowering solvent viscosity; however, column lifetime might be compromised.

We strongly recommend using only solvents that have been prepared specifically for HPLC, and that you thoroughly filter and degas all mobile phases before use. Residue and chemical contaminants in non-HPLC grade solvents can alter a column's selectivity and, by plugging the inlet frit, significantly increase system pressure. Samples also should be filtered prior to injection into the UHPLC column.

Restek UHPLC columns can tolerate pressures of up to 15,000 psi. For maximum column lifetimes, however, it is recommended that you operate at pressures of less than 10,000 psi. This is an optimal balance between speed, resolution and column lifetime. In addition, ballistic gradients which produce sharp increases in backpressure can adversely affect column lifetime. Working at pressure extremes will shorten column lifetimes.

Sudden changes in pressure can also damage the column. This is particularly of concern when disconnecting the column from the system as pressure dissipates very slowly after the flow has been stopped. Adequate time must be given to allow the backpressure to return to zero before disconnecting the column. Rapid changes in pressure will likely irreversibly damage the column.

Increases in column backpressure indicate a plugged inlet frit or other problem. First isolate the problem by removing the column and installing a union in its place. If the pressure returns to normal, the problem is likely a blockage within the column. If the pressure remains high, the problem is within the UHPLC system. Disassembling the column may degrade column performance and is generally not recommended.

Column clean-up

Column lifetime can be extended considerably through routine column washes and proper storage. Columns should be flushed prior to storage, to remove buffers, acids, or bases. The ideal flushing solvent is a solution identical in composition to the last used mobile phase, minus any buffer, acid, or base components. Be sure to store information describing the storage solvent with the column. When rinsing or equilibrating your column, use at least 10-20 column volumes of mobile phase.

Column Void Volume		
Column Length (mm)	Column ID (mm)	Column Void Volume (mL)
30	2.1	0.10
50	2.1	0.17
100	2.1	0.35

If system pressure begins to rise, backflushing the column might reduce pressure by removing particle buildup from the inlet frit. Backflush the column by first disconnecting it from the injector and detector, then reverse the column flow direction by connecting the outlet end of the column to the pump. Flush the column with solvent (for help in selecting the appropriate solvents, please contact our Technical Service Department). Collect the solvent exiting the inlet end of the column into a beaker. **Do not backflush the column into your detector.** After rinsing, return to the normal flow direction and re-equilibrate the column with mobile phase. If storing the column, replace the endplugs securely to prevent the column from drying out.

Column storage

Reversed phase columns should be stored with 50% organic solvent (e.g., acetonitrile or methanol) and 50% water. Normal phase columns should be stored with a nonpolar solvent (e.g., hexane). All columns should be stored with their end plugs securely fastened.

**Call Technical Service at 800-356-1688 or 814-353-1300, ext. 4 (or your Restek representative)
if you have any questions about this product or any other Restek product.**



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