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Ion-exclusion columns, such as the Phenomenex Rezex column, have been widely used on the analysis of sugars and organic acids. The aqueous based mobile phase is environmentally friendly and helps to lower the process cost by avoiding organic solvent. The separation on Rezex column based on multiple modes of interaction, including electrostatic/ionic exclusion, partition/adsorption, and size exclusion. With 4% and 8% cross-linked sulfonated styrene divinylbenzene (SDVB) and multiple ionic forms, Rezex ion-exclusion columns provide a wide range of selectivity.

Since Rezex is a polymer-based column with size exclusion separation mechanism involved, it is very sensitive to pressure change. All the 8% cross-linked columns have a maximum pressure of 1000 psi and for 4% cross-linked columns, it is 300 psi. Exceeding the pressure limit might crash the polymer particles, resulting in broader peak shape and shifting retention time. Additionally, to achieve the best performance and longest column lifetime, there are some tips on installing the Rezex ion-exclusion column.

To install the ion-exclusion column, you should first set a low flow rate (around 0.1 mL/min) with your mobile phase, and keep the column at ambient temperature. Install the column as the direction of flow marked on the column label, then heat the column to the desired temperature of your method gradually. The maximum temperature for Rezex column is 85 °C. Temperature higher than the maximum limit might reduce the column lifetime. After achieving the method temperature, you can gradually increase the flow rate to the desired

method flow. Please always make sure the column does not exceed the maximum pressure limit.

You might see some colored discharge when you first install the column. This is common. Rezex uses sulfonated polystyrene materials. Some extra sulfonated fractions that diffuse over time in the column might be “squeezed out” at high pressure during the initial operation. It is normal to have colored discharge for the first few column volumes.

When you finish a day’s work and would like to shut down the system, it is recommended to first reduce the flow rate to 0.2 mL/min. Then reduce the column temperature back to ambient level. After ensuring that the column is at ambient temperature, flow can be stopped, and column can be removed from the system. If you’d like to continue to use this column on the next day, you can leave it on the system and set a flow rate of 0.1 mL/min overnight.

You might think the column lifetime of Rezex ion-exclusion column is not as long as reversed phase column like C18. However, if you follow some tips, you’ll get a longer lifetime for Rezex columns. First, make sure you do not have any charged species in the sample or mobile phase if you’re using the ionic form Rezex column. The cation that is different to the ionic form of column will replace the metal ions associated with the phase, which will lead to bad peak shape and different selectivity. Also, make sure you install the column and shut down the system as suggested above. Pressure should be monitored all the time when the column is on the system. Last, it is always suggested to filter the sample with syringe filter

before injection and use a guard system (such as SecurityGuard) to protect the analytical column.

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If you have any questions regarding the above information, please reach out to our Technical Experts, like Grace, through our Live Chat portal. They are here to help 24/7 around the world!

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