"Base-deactivated" means that the column is designed for analysis of basic compounds and to produce reduced peak tailing.

Ordinary columns based on Type B silica typically have Si-OH *(silanol)* groups on the surface that interact with and slightly retain bases. This secondary retention mechanism is typically undesirable and causes poor peak shapes. The following are two ways that *Reversed Phase* HPLC columns can get around this:

1) They "**fully end-cap**" the stationary phase material. This is where we react the un-bonded or residual Si-OH groups with a small organic functional group, which does not interact with bases like Si-OH groups do. The problem with this method is that the end-capping groups are susceptible to hydrolysis over time especially at pH lower than 2.5. Therefore, the chromatography of the column may change over time as these groups are hydrolyzed and therefore removed from the stationary phase.

2) We use a "**polar embedded**" group in the ligand of the bonded phase. This is where the organic ligand *(e.g. C18)* has an amide *(—CO—NH—)* group near the beginning of the chain. What this means is that the amide hydrogen-bonds with nearby Si-OH groups and thereby reduces their **activity** towards bases.

As a third and more recent approach, is the **Cogent TYPE-C Silica™** columns that are made such that the Si-OH groups are virtually 100% replaced with a stable layer of Si-H surface which does not adsorb water. Si-H are not acidic and therefore does not contribute to basic peak tailing because they do not interact with basic compounds. The Si-H groups are extremely stable and low pH has not effect on them. Cogent TYPE-C Silica™ Product Page

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