Metal Free Stainless Steel Coated HPLC Frits and Hardware - Tech Information

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Stainless steel remains the dominant material in HPLC hardware, with **304** and **316** stainless steel being the most widely used grades. These alloys differ primarily in their elemental composition and, consequently, their chemical resistance.

- 304 stainless steel typically contains 18% chromium and 8% nickel.
- 316 stainless steel incorporates 16% chromium, 10% nickel, and an additional 2% molybdenum, which significantly enhances corrosion resistance.

The inclusion of molybdenum in 316 stainless steel is especially important in environments where saline or chloride-rich solutions are present. This makes 316 a superior option for applications such as biologic separations, where even trace corrosion can negatively affect chromatographic performance.

However, despite the advantages of 316 stainless steel, corrosion is still possible—even at levels low enough to be visually undetectable. In bio-separations or methods involving chelating agents, proteins, or metal-sensitive analytes, these subtle interactions can cause method drift, peak distortion, or loss of analyte integrity.

To address these challenges, metal-free coated Cogent TYPE-C columns and associated hardware have been developed. By applying a specialized inert coating to the stainless-steel surface, chromatographers gain a more stable environment for analytes susceptible to metal interaction. This coating offers clear advantages, including improved durability compared to PEEK components while maintaining the chemical resistance needed for demanding applications.

Key Benefits of Metal-Free Coated TYPE-C Hardware:

- Enhanced performance when analyzing chelating agents and other compounds prone to metal interaction
- Improved phosphate analysis by preventing iron interaction and adsorption
- More reliable antifungal agent analysis
- Better protein analysis with reduced risk of metal-induced adsorption
- A high-durability alternative to PEEK, particularly useful where pressure or solvent compatibility is a concern
- Suitable for corrosive or chloride-rich environments where traditional stainless steel may degrade over time

Metal-free coated hardware provides an effective solution for laboratories seeking to eliminate metal-analyte interactions without compromising mechanical strength or system robustness

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