

## Stainless Steel vs. Titanium for Mobile Phase Inlet Filters - Tech Information

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### Overview

Mobile phase inlet filters are critical for preventing particulate contamination, cavitation, pump wear, and system instability in HPLC workflows. The choice of filter material impacts chemical resistance, sample integrity, and long-term performance.

Both stainless steel and titanium are widely used in inlet filtration, but each material offers advantages depending on the application and sample composition.

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### Stainless Steel Inlet Filters

#### Key Characteristics

- Durable and suitable for most routine HPLC solvents and mobile phases.
- Resistant to the majority of organic and aqueous solutions.
- Cost-effective and widely used in general analytical workflows.

#### Best Applications

- Standard reversed-phase and normal-phase analyses
- Methods involving small molecules or common organic analytes
- Environments where biological reactivity is not a concern

Stainless steel remains the default choice for the majority of chromatography labs due to its strength and solvent compatibility.

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### Titanium Inlet Filters

#### Key Characteristics

- Highly inert and resistant to corrosion, especially in the presence of halides or high-salt buffers.
- Excellent biocompatibility, making it less reactive toward sensitive biomolecules.
- Preferred when minimizing metal-analyte interactions is essential.

#### Best Applications

- Analyses involving biological matrices
- Protein, peptide, oligonucleotide, and metabolomics workflows
- LC-MS applications where metal-induced adducts or signal suppression must be avoided

Titanium provides an inert flow path that reduces unwanted adsorption or reaction with complex biological samples.

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## Choosing Between Stainless Steel and Titanium

### General Guidance

- Stainless steel performs well in most applications.
- Titanium is recommended when working with biological analytes, biological fluids, or samples susceptible to metal interaction.

Choosing titanium ensures a more inert and biocompatible environment, reducing the risk of sample degradation or metal-related artifacts.

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### Additional Resources

A stainless-steel inlet filter product page is referenced for laboratories requiring standard configurations and specifications.

[Stainless steel inlet filter product page](#)

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