

Autoclavability of PEEK Tubing and PEEK Fittings in HPLC - Tech Information

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Overview

PEEK tubing and PEEK fittings are widely used in HPLC because of their excellent chemical resistance, mechanical strength, and inertness.

Many laboratories also require sterilization—particularly in bioanalytical, microbiological, or pharmaceutical workflows—raising the question of whether PEEK components can safely withstand autoclaving or other sterilization methods.

General Autoclavability of PEEK

Compatibility With Sterilization Methods

- PEEK components have been successfully sterilized using multiple methods, including:
 - Gamma irradiation
 - Standard heat-based autoclaving
 - Ethylene oxide sterilization
- These methods do not typically degrade PEEK's structural properties when used within recommended temperatures and exposure conditions.

Why PEEK Performs Well Under Sterilization

- PEEK is a high-performance polymer known for resistance to deformation at elevated temperatures.
- It maintains dimensional stability, which is essential for maintaining pressure integrity in HPLC connections.
- Chemical inertness prevents contamination of mobile phases and samples even after repeated sterilization cycles.

Operational Considerations

When Sterilizing PEEK Tubing and Fittings

- Confirm that the sterilization temperature does not exceed PEEK's upper thermal limits.
- Avoid prolonged exposure to extreme temperatures or overly aggressive sterilization cycles.
- After sterilization, inspect fittings for:
 - Surface stress
 - Thread wear
 - Compression ferrule integrity

These checks ensure continued leak-free performance in high-pressure applications.

Recommended Use Cases

Applications Benefiting From Sterilized PEEK Components

- Bio-LC and proteomics environments
- Sterile pharmaceutical workflows
- Microbiological testing methods
- Any application requiring minimized contamination risk

PEEK is preferred where stainless steel might leach metals or interact with sensitive biological samples.

Limitations to Keep in Mind

Potential Challenges

- Excessive autoclaving temperature or duration may reduce fitting lifetime.
- Repeated cycles may cause gradual stress on ferrules, especially in high-pressure zones.
- For extremely aggressive sterilization needs, stainless steel may still be superior for longevity.

Overall, PEEK remains a reliable choice when handled within its performance envelope.

Click [HERE](#) for PEEK Tubing Information

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