Fittings Recommended for Mobile Phase Connections - HPLC Primer

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Overview

Mobile phase connections are continuously immersed in solvent bottles and exposed to a wide range of aqueous, organic, and buffer-based mixtures. Because of this constant solvent exposure, material compatibility is critical.

Using the wrong fittings can introduce extractables, cause corrosion, weaken seals, or contaminate the mobile phase. MICROSOLV provides specific recommendations to ensure clean, reliable solvent uptake.

Recommended Fitting Materials

PEEK Fittings

- Chemically inert across most HPLC mobile phases
- Non-metallic and non-reactive
- Ideal for continuous immersion in solvent reservoirs
- Resistant to swelling in common aqueous/organic blends

ETFE Fittings

- Excellent solvent compatibility
- Suitable for long-term immersion
- Provide secure, non-contaminating seals

These two materials—PEEK and ETFE—are the only fittings recommended for mobile phase pickup lines and solvent-bottle connections.

Materials to Avoid

Not Recommended for Mobile Phase Connections

- Stainless steel
- Nylon
- Polypropylene
- Other reactive or absorbent plastics

These materials may corrode, leach additives, alter solvent composition, or shed particulates when submerged in mobile phase.

Why Material Choice Matters

Contamination Risk

- Non-inert materials can contribute:
  - Extractables
  - Ionic contamination
  - Particulate matter
  - Corrosion products
- Even minor contamination affects sensitivity, retention, and baselines.

Microbial Growth

- Mobile phase lines and inlet filters can accumulate:
  - Biofilm
  - Microorganisms
  - Organic deposits

These contaminants may increase system back-pressure or add noise to UV or MS detectors.

Best Practices for Mobile Phase Connections

Replace Inlet Filters Regularly

- Inlet filters can trap biological or particulate contaminants over time.

Use Clean Gloves When Handling

- Bare hands can transfer oils or contaminants to tubing, fittings, or solvent reservoirs.

Inspect and Replace Tubing as Needed

- Deposits inside pickup tubing can cause:
  - Pressure fluctuations
  - Flow restriction
  - Baseline instability

MicroSolv Technology Corporation
9158 Industrial Blvd. NE, Leland, NC 28451
Tel: (732) 380-8900
Fax: (910) 769-9435
Email: customers@mtc-usa.com
Website: www.mtc-usa.com