

TECHNICAL OPERATING PROCEDURE

PROCEDURE TITLE: Filtering Solvents and Solutions for Analytical Uses

APPLICABILITY: Branch of Aquatic Ecosystem Health

PRINCIPLE: Use of particle-free solvents is important for the operation of analytical systems to prevent flow obstructions and the introduction of air bubbles in the system.

PRECAUTIONS

A. Potential Interferences

1. Ensure that glassware is clean before filtering solvents and solutions.
2. Use a compatible solvent filter type (aqueous, non-aqueous, or universal) for the solution being filtered. Refer to the product description in a products catalogue for proper filter selection.
3. Acetonitrile polymerizes. It should be filtered at least every 4 weeks if it is being used in an Ultra Performance Liquid Chromatography (UPLC) system. If a bottle of acetonitrile is open on the shelf, it is recommended to filter before use. Unopened bottles of acetonitrile may be used directly.
4. Buffer solutions prepared with salts should be filtered before use.
5. Always refer to the instrument user manual for guidance on the proper procedures for preparing solvents and solutions for use.

B. Safety

1. Always wear safety glasses, a lab coat, and gloves when filtering solvents.
2. Follow the Material Safety Data Sheets for solvents used during the execution of this procedure.

PROCEDURE

A. Vacuum Filtration

1. Equipment
 - a. Solvent filter, use a filter type compatible with the solution being filtered (aqueous, non-aqueous, or universal). Select a filter pore size based on the specific application (e.g. 0.2 micron filter for HPLC solvents).
 - b. Glass reservoir funnel

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- c. Fitted glass support base
 - d. Solvent collection flask
 - e. Clamp
 - f. Vacuum pump (e.g. Gast® model DOA-152-AA or similar pump) with vacuum tubing.
2. Place a solvent filter between the fritted glass support base and the glass funnel. Assemble the support base and funnel with a clamp and place on top of the solvent collection flask.
 3. Connect the vacuum tubing to the support base and the vacuum pump.
 4. Turn **ON** the vacuum pump. Fill the funnel with solvent; refill as needed.
 5. After the gas bubbles have vacated the solvent, turn **OFF** the pump, disconnect the tubing from the support base, and disassemble the support base, funnel, and solvent flask.
 6. If necessary, pour the filtered solvent into a solvent reservoir minimizing agitation by slowly pouring the solvent down the inside surface of the solvent reservoir.
- B. Record Keeping
1. If solutions are used for UPLC or Liquid Chromatography-Mass Spectrometry (LC-MS), record the type of mobile-phase solvents in the appropriate Instrument Logbook (Form AEH 237.a).
 2. For all other applications, record use of solutions in instrument logbooks if applicable.

REVIEWED BY: 
Quality Assurance Officer

DATE: 09 March 2012

APPROVED BY: 
Branch Chief, Aquatic Ecosystem Health

DATE: 09 March 2012