

Polypropylene Vial Compatibility in LCMS Using DMSO - Tech Information

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Dimethyl sulfoxide (DMSO) is widely used in pharmaceutical, biochemical, and high-throughput screening workflows due to its strong solvating power. However, DMSO's aggressive solvency can cause issues with plastics in certain conditions. This advisory clarifies how AQ™ Advanced Quality LC-MS-compatible polypropylene (PP) vials behave when used with DMSO and outlines best practices for high-confidence LC-MS work.

1. Polypropylene Vial Compatibility with DMSO

DMSO is not considered chemically reactive toward polypropylene autosampler vials, including MICRO SOLV's AQ™ Advanced Quality brand LC-MS vials. Polypropylene is generally robust against DMSO exposure and does not undergo reactive degradation under typical laboratory conditions.

This makes PP a viable option for storing, diluting, or injecting DMSO-containing solutions—especially when glass adsorption or glass-derived surface interactions must be avoided.

2. The Extractables Consideration: When DMSO Becomes a Risk

Although DMSO is not chemically reactive with PP, it remains an **aggressive organic solvent**, and under certain conditions it can extract trace compounds from plastics. This may result in:

- Ghost peaks or unexpected background signals in HPLC or LC-MS chromatograms
- Ion suppression or baseline distortion
- Sample contamination affecting sensitive quantitation

Factors influencing extractables include:

- Solvent concentration (neat DMSO vs. diluted mixtures)
- Temperature exposure
- Storage duration
- Additives or processing residues in lower-grade plastics

Key technical insight: The more concentrated the DMSO, the greater its solvating strength and the higher the likelihood of leaching trace compounds from plastics. Neat or high-percentage DMSO carries the highest risk.

3. Recommended Best Practices for DMSO Use in PP Vials

To minimize the risk of extractables and maintain LC-MS data integrity, MICRO SOLV recommends:

A. Pre-testing the solvent–vial combination

Before loading valuable samples, test your DMSO solution under your method conditions to ensure no background peaks or extractable signatures appear. This is crucial for high-sensitivity LC-MS applications.

B. Prefer diluted DMSO where possible

Diluting DMSO with water (e.g., 50/50 DI water/DMSO) significantly reduces its ability to extract plastic residues.

C. Use LC-MS-compatible MICROSOLV's AQ™ Vials for reduced extractables

MICROSOLV's LC-MS-compatible polypropylene microvials are formulated to minimize extractables, making them better suited for use with DMSO than generic polypropylene plasticware.

[LCMS Compatible MicroVial Ordering Information](#)

4. Summary for Technical Users

- Yes, AQ™ Advanced Quality brand PP LC-MS vials are compatible with DMSO.
- However, DMSO can extract trace residues from plastics under higher-risk conditions such as neat concentration, warm temperatures, or long storage times.
- Testing your solvent/vial combination is strongly recommended prior to use in any analytical workflow.
- For LC-MS applications, using MicroSolv LC-MS-compatible microvials offers the lowest extractables risk and the highest confidence in chromatographic cleanliness.

In short: Polypropylene is generally safe for DMSO, but solvent aggressiveness demands proper validation for high-precision work.

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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