# Polypropylene LCMS Vials Differs from Standard Plastic Vials - Tech Information

*Date: 13-APRIL-2018  Last Updated: 27-OCTOBER-2025*

Choosing the correct plastic vial for LC-MS, HILIC, or ANP workflows is more than a convenience decision—it directly affects baseline cleanliness, reproducibility, and quantitative accuracy.

Although standard polypropylene (PP) microvials and LC-MS–compatible PP microvials may look similar, they differ in polymer formulation and manufacturing process, which in turn determines their extractables/leachables profile and suitability for high-sensitivity analyses.

## 1) Polymer & Process: Where the Difference Really Comes From

- Standard PP microvials (e.g., 9532S-0PV) are often produced on high-throughput injection-molding lines that use mold-release agents and other process additives so parts eject rapidly and reliably. Traces of these additives can remain in the plastic. Under LC-MS conditions, common solvents (notably acetonitrile) can extract these residues—resulting in spurious peaks and unstable baselines.
- LC-MS–compatible PP microvials (e.g., 9532S-MS) are made from a special polypropylene and —critically—do not use mold-release agents in the molding process. This yields a vial that is far less likely to produce extractables or leachables under typical chromatographic conditions.

  Why acetonitrile matters: Among routine LC solvents, ACN is especially effective at solvating low-molecular-weight additives. If those additives are present, ACN gradients can pull them into the run, creating ghost peaks and interfering with trace-level quantitation.

## 2) Practical Impact on Chromatography and Mass Spectrometry

When you might get away with standard PP vials

- Routine HPLC where trace-level sensitivity is not required and organic content is modest.
- Applications tolerant of a small background (no LC-MS).

When you should require LC-MS–compatible PP vials

- LC-MS, HILIC, and ANP methods using high organic content or strong solvents (e.g., ACN).
- Trace-level or low-abundance analytes where any background degrades S/N.
- Methods with tight system-suitability limits or regulated release testing.
  In these scenarios, avoiding mold-release agents and lowering extractables is essential to maintain baseline cleanliness and accuracy.

## 3) What “LCMS–Compatible” Really Implies

“LC-MS–compatible” in MicroSolv’s usage points to:

- Additive-controlled processing (no mold-release agents), and
- Special PP formulation aimed at minimizing extractables/leachables with common LC solvents. This manufacturing approach mirrors the quality philosophy used across MicroSolv's Advanced Quality tiers designed to reduce background contributions from consumables.

## 4) Best-Practice Guidance for Technical Users

1. Match vial type to method solvent strength. If your gradient reaches high-% ACN or other strong organics, select LC-MS–compatible PP vials to prevent additive extraction.
2. Run solvent blanks from the vial (no analyte) during method development to screen for background from the container closure system; look for LC-MS ghost peaks or elevated baseline.
3. Document vial lot and type in your method or study protocol; changing vial chemistry mid-study can shift backgrounds and impact trending. ]
4. For very small volumes, pair LC-MS–compatible vials with appropriate low-volume inserts to minimize residual volume without re-introducing extractables. (Select inserts that are proven low-extractable for your solvents and analytically screened for cleanliness.)

---

## 5) Bottom Line

- Standard PP microvials: adequate for many routine tasks, but risk extractables—especially with ACN—due to mold-release agents and similar additives.
- LC-MS–compatible PP microvials: special PP and no mold-release agents, providing cleaner baselines and greater confidence in LC-MS, HILIC, and ANP methods.

If your data quality depends on low background and stable baselines, the LC-MS–compatible option is the right engineering choice.

AUTOSAMPLER
VIALS AND CAPS



**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