

## Benefits of Using Soft-Guard Brand Autosampler Vial Caps - Tech Information

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### **Soft-Guard™ Autosampler Caps: Engineering, Performance, and Best-Use Guidance**

Summary: Soft-Guard™ caps use a high-purity silicone rubber septum with a cast PTFE face engineered for superior resealing and low extractables, minimizing solvent loss and baseline interference in LC, GC, and LC-MS(/MS) workflows.

#### **1) Materials & Construction That Matter**

- Septum formulation: Soft-Guard™ septa are built from high-purity silicone rubber with a cast PTFE facing to suppress leachables that produce ghost peaks or ion-suppression—critical for LC-MS(/MS) and high-sensitivity HPLC/GC methods.
- Designed resealability: The septa are optimized to pierce easily and reseal reliably across multiple injections, protecting against sample evaporation and minimizing carryover.
- System integration: Soft-Guard™ caps are offered in screw and snap formats matched to MicroSolv vial geometries for proper compression and sealing force.

**Why cast PTFE?** Cast PTFE provides a uniform, consistent barrier that resists common organic mobile phases, helping maintain low background and stable baselines during gradients.

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#### **2) Evaporation Control & Reseal Performance**

- Low solvent loss: After needle penetration, Soft-Guard™ tends to reseal more effectively than conventional septa, reducing evaporative concentration drift during long autosampler queues.
  - Practical impact: Reduced evaporation lowers the risk of apparent potency increases or variable response factors in sequences that span hours to days—especially for semi-volatile analytes or micro-volume injections. (General evaporation context from MICRO SOLV CRC.)
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#### **3) LC-MS(/MS) Cleanliness Considerations**

- Low-extractable design: The silicone/PTFE system is selected to minimize chemical extractables, supporting clean baselines and robust S/N in gradient LC-MS(/MS).
  - When to step up purity: For ultra-trace assays demanding the lowest possible background, consider AQR™ caps (ultra-pure, LC-MS-optimized) while retaining Soft-Guard™ mechanics.
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#### **4) Selection & Configuration Tips**

##### **1. Match cap to vial thread & design**

Use MicroSolv caps with MicroSolv vials so thread/pitch and land height align; this preserves

sealing pressure and evaporation control.

## 2. Choose slit geometry for your autosampler

Pre-slit options (e.g., X/Y) can reduce needle load and coring for tighter needle-to-septum designs; non-slit maximizes reseal on longer queues. (See product-level Soft-Guard guidance.)

## 3. Validate with blanks

Run **mobile-phase** and **matrix blanks** when changing cap/septa types or moving to higher method sensitivity; upgrade to **AQR™** if baseline targets are not met.

## 4. Torque consistency

Over-tightening can deform septa; apply consistent hand-tightening or torque fixtures to maintain reseal and minimize evaporation variability. (General MicroSolv cap handling guidance.)

# 5) Use-Case Guidance by Method Sensitivity

Method scenario	Recommended cap line	Rationale
Routine HPLC/GC; ppb–low-ppb limits	Soft-Guard™	Reliable reseal, low extractables, clean baselines for most applications.
High-throughput LC-MS with long queues	Soft-Guard™ or AQR™ (if S/N is tight)	Soft-Guard™ minimizes evaporation; AQR™ further reduces background for stringent S/N.
Ultra-trace LC-MS/MS; sub-ppb	AQR™	Ultra-pure materials for the lowest extractables; retains Soft-Guard-style mechanics.

# 6) Key Takeaways

- Soft-Guard™ = high-purity silicone + cast PTFE + engineered reseal, delivering low extractables and reduced evaporation across LC/GC/LC-MS workflows.
- Correct cap–vial matching and slit selection preserve seal quality, minimize evaporation, and protect sample integrity during long sequences.
- For ultra-trace requirements, AQR™ caps provide the lowest background while maintaining handling advantages similar to Soft-Guard™.

👉 [Learn more about Soft-Guard™ Septa Technology.](#)

References [1] [Soft-Guard™ septa - 9502S-E-30C-B | MICRO SOLV Technology Corp](#)



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