Screw Caps For Use in Ion Chromatography - Tech Information

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Screw Caps for Use in Ion Chromatography (IC): What To Choose and Why

Selecting the correct screw cap and septum for ion chromatography is critical to minimize ionic background, avoid leachables that distort anion/cation responses, and maintain a reliable seal during autosampler operation.

1) Recommended cap materials for IC

For the lowest ionic background and minimal extractables, MicroSolv recommends ultra-pure polyethylene (PE) screw caps for IC workflows. These caps are engineered specifically to reduce ionic contamination and are ideal where background cleanliness is paramount. Note: these PE caps are single-use (they do not reseal after needle penetration). They're the right choice when minimizing ion background takes priority over reusability.

> Why single-use matters: eliminating elastomer reseal layers avoids potential ionic or additive contributions that can raise blank levels in sensitive IC methods.

2) What about BASIK™ screw caps?

BASIK™ brand screw caps are not designed for ion chromatography. They may work in less-sensitive applications, but they are not recommended for methods with stringent detection limits or tight system-suitability margins. If you must run IC at low µg/L (ppb) levels or have difficult matrices, choose the ultra-pure PE single-use caps instead.

3) Pairing caps with IC-friendly vials

To further control ionic background, pair your IC screw caps with polypropylene (PP) autosampler vials, which are commonly used in IC for their low ionic extractables and inertness to many eluents. MicroSolv's PP vials are available in clear or amber and 9-425 threads; they're suitable when glass contributes unwanted ion background in sensitive IC assays.

4) When LC/GC-style caps *are* acceptable

If you are not operating at extremely low detection limits (e.g., method development, system flushes, or robustness checks), high-quality screw caps with silicone/PTFE bonded septa (AQR™ / AQ™ lines) may be acceptable. However, these are optimized for LC/GC and LC-MS cleanliness rather than IC ion background; for maximum IC performance, prefer ultra-pure PE.

5) Practical selection guide

- Highest-sensitivity IC (trace anions/cations, sub-ppb limits):
  Use ultra-pure PE single-use screw caps + PP vials to minimize ionic background and leachables.

- Moderate-sensitivity IC / screening:
  PE caps remain preferred; BASIK™ caps may function but are not recommended for critical quantitation.
- LC/GC/LC-MS work (not IC):
  Select AQR™/AQ™ silicone/PTFE caps for low organic extractables and robust resealing (outside IC).

6) Implementation checklist for IC labs

1. Specify single-use PE caps in the method/SOP for all reportable IC runs to lock in background control.
2. Use PP vials where glass-derived ions or washing residues could bias results.
3. Avoid re-use after a needle puncture with PE caps; resealing is not supported by design.
4. Match cap thread to vial (9-425 for standard 12×32 mm) to ensure proper compression and prevent micro-leaks.
5. Run blank controls when changing cap/vial lots to verify ionic background stays within acceptance criteria. (Good practice; aligns with the above guidance.)

Note that these caps, are a single use cap and will not reseal after injection.

Click HERE for more information about IC compatible caps.
Click HERE for PP vials that are IC compatible.

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