

All liners are
100%
deactivated

All liners are shipped intermediate polarity (IP) deactivated unless otherwise requested.

A) Straight Tube



B) Gooseneck



C) Recessed Gooseneck



D) Double Gooseneck



E) Recessed Double Gooseneck



F) Drilled Uniliner®



hole near top



hole near bottom

G) Splitless with Wool



Inlet Liners for Splitless Injection—Benefits & Drawbacks

The residence time of the sample in a splitless liner is dependent on liner geometry, gas velocity, and sample vaporization time. Splitless liners usually are designed as straight tubes, with alternative designs, such as a gooseneck restriction, which help contain the sample cloud in the injector and minimize the breakdown of compounds sensitive to catalytic decomposition from contact with metal inlet parts. Liners packed with wool help promote sample vaporization, as well as trap nonvolatile residue to prevent column contamination. Some of the more commonly used splitless liners are described below.

A) Straight Tube

Use for samples containing a narrow molecular weight distribution and for analytes not prone to thermal decomposition. Packing with wool is recommended. Wool aids in vaporization of high molecular weight compounds and minimizes discrimination.

Benefits:

- Low cost.

Drawbacks:

- Potential decomposition of active compounds such as endrin and phenols when packed with wool.
- Prone to high molecular weight discrimination.
- Sample exposed to metal surface below liner.

B) Gooseneck

Benefits:

- Decreases sample contact with metal inlet parts.
- Improves sample transfer to column.

Drawbacks:

- No known drawbacks.

C) Recessed Gooseneck

Recessed gooseneck liners offer the same benefits as gooseneck or double gooseneck liners, but the base of the recessed gooseneck can be packed with wool. Also, this liner can be used with a two-hole ferrule, for dual-column analysis.

Benefits:

- Increases splitless efficiency.
- Decreases breakdown of active compounds such as endrin and DDT.
- Chamber contains sample vaporization cloud.
- Can be packed with wool.

Drawbacks:

- No known drawbacks.

D) Double Gooseneck

Benefits:

- Decreases sample backflash.
- Decreases injection port discrimination.

Drawbacks:

- Cannot be packed with wool—only recessed double goosenecks can be packed with wool.
- Difficult to clean.

E) Recessed Double Gooseneck

Best liner for catalytically labile or high molecular weight compounds. Isolates sample from metal injection port parts. Use the cyclo-version for dirty samples.

Benefits:

- Highest splitless efficiency.
- Breakdown of active compounds decreased.
- Chamber contains vaporization cloud.
- Can be packed with wool.

Drawbacks:

- Higher cost than straight splitless liners.

F) Drilled Uniliner®

A hole drilled into this liner allows direct injection in EPC systems and reduces sample discrimination, compared to typical splitless injections. The Drilled Uniliner® with the hole near the bottom is recommended for semivolatiles analysis or when compounds of interest could be affected by a tailing solvent peak. The Drilled Uniliner® with the hole near the top is recommended for aqueous injections, chlorinated pesticides, as well as analysis in which the compounds of interest elute away from the solvent peak.

Benefits:

- Excellent transfer of analytes to column.
- Decreases injection port discrimination.
- Removes excess solvent vapor.
- Eliminates the need for wool.
- Less adsorption—no sample contact with metal parts below liner.

Drawbacks:

- Higher amounts of nonvolatile materials transferred to column.

G) Splitless with Wool

Wool provides a large surface area, to allow rapid vaporization of the sample and deliver a uniform vapor cloud to the split point. The low mass of the wool fiber promotes complete vaporization.

Benefits:

- Low cost.
- Reproducible performance.

Drawbacks:

- Wool can be adsorptive, especially if fibers are broken.
- High maintenance requirements.