

## Sample Loops Explained - HPLC Primer

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### Overview

Sample loops play an essential role in ensuring accurate, repeatable injections in HPLC and other analytical systems. These precisely engineered pieces of tubing hold a defined internal volume, allowing the autosampler or manual injector to deliver consistent sample quantities into the chromatographic flow path.

Understanding why loops differ in appearance—and why some form visible coils while others remain straight—helps clarify how these components function and why their physical shape does not determine performance.

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### What Sample Loops Are and Why They Matter

Sample loops are available in a wide range of calibrated volumes to accommodate analytical needs, from micro-volume injections to larger preparative volumes. Every loop is designed to deliver an exact internal volume regardless of the physical formation of the tubing.

A loop's job is simple yet critical:

- Maintain reliable, reproducible sample volume
- Withstand solvent compatibility and system pressure
- Integrate seamlessly with manual or automated injection systems

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### Why Sample Loops Look Different

#### Loops With Multiple Visible Turns

Larger-volume loops naturally require more tubing length. To manage this length in a compact form, manufacturers coil the tubing into multiple visible turns. This coiled shape is common and expected.

#### Loops With No Visible Turns

Very small-volume sample loops may appear straight or nearly straight because the tubing is too short to coil. The absence of a visible loop:

- Does not indicate missing components
- Does not affect accuracy
- Does not alter injection reproducibility

A straight loop performs identically to a coiled loop of the same calibrated internal volume.

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### Performance Is Not Affected by Physical Shape

The internal volume is what defines a sample loop—not its external geometry. Whether coiled or straight, each loop is precision-manufactured to deliver the exact volume printed on its label.

This means that even if the tubing does not visually resemble a loop, the product continues to function exactly as designed.

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## Ordering Information

A complete selection of MICROSOLV' ARE-Applied Research brand of sample loops, along with product images and configuration options, is available by clicking [HERE](#) for sample loop ordering information and product images



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