Dead Volumes of the MRQ and Fused Insert Autosampler Vials - Tech Information

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Dead volume—often referred to as residual volume—is an important consideration when working with small-volume autosampler vials. For both our MRQ and Fused Insert autosampler vials, the **typical residual volume is approximately 2 µL.**

This value represents the amount of liquid that remains inaccessible to the autosampler needle after aspiration. Even with insert designs optimized for efficient sample recovery, a small amount of volume naturally remains below the needle's reach or along surfaces where capillary forces retain droplets. Understanding this behavior helps analysts plan sample volumes more accurately—especially when working with limited or precious materials.

The dead volume in these vials behaves analogously to residual volume, meaning it directly contributes to the minimum practical sample requirement for reliable injections. Laboratories that require high sensitivity or must conserve scarce analytes should factor this ~2 µL residual limit into their method development and sample preparation workflows.

Proper vial selection, correct autosampler needle depth settings, and ensuring inserts are fully seated can help minimize sample loss and maintain consistent injection performance across runs. While the dead volume cannot be entirely eliminated, understanding its approximate magnitude enables better planning and reduces the risk of inconsistent peak areas or failed injections due to insufficient sample height.

AUTOSAMPLER
VIALS AND CAPS

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