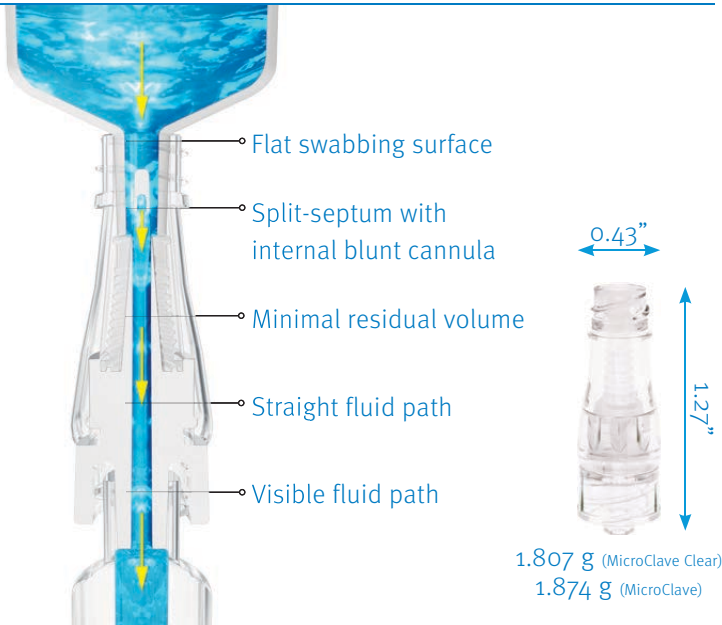
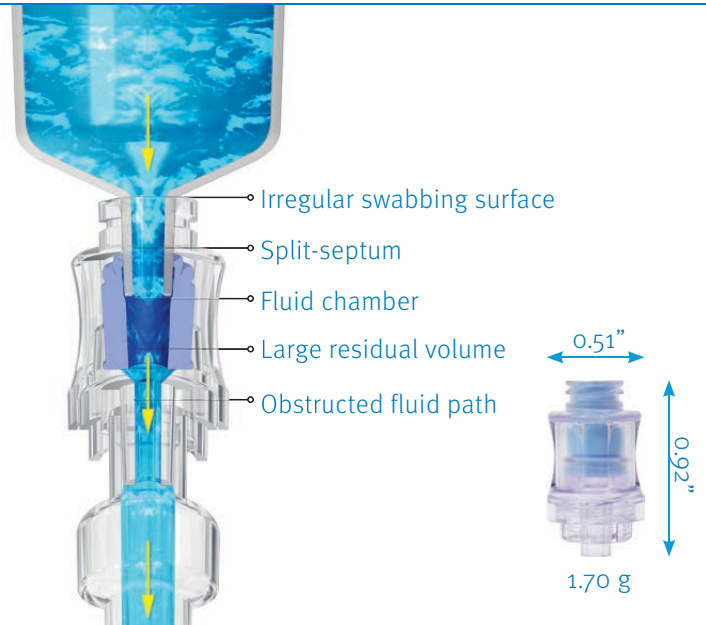


MicroClave® and Q2® Comparative Matrix

MicroClave by ICU Medical Inc.



Q2* by Quest Medical, Inc.



PRODUCT PERFORMANCE	MICROCLAVE TECHNOLOGY	Q2 TECHNOLOGY
Base Technology	Internal cannula and silicone compression seal split-septum. Internal cannula windows are exposed by the insertion of a male luer, and cannula enters the male luer's internal space to achieve flow.	Male luer of administration device pushes through the septum. Fluid enters an interstitial fluid chamber before exiting the valve.
Displacement	Neutral: 0 to -0.01 mL	Negative: -0.021 mL
Residual Volume	0.04 mL	Claim 0.1 mL
Fluid Path	Straight through polycarbonate cannula. Enhances flushing efficiency.	Through silicone slit into interstitial valve chamber.
Moving Parts in Fluid Path	No	Yes
Fluid Residual External on Disconnect	Minimal	Yes
Clamping Sequence	None required	Yes. Clamp before disconnect.
Flow Rate	165 mL/min	550 mL/min
Clear Available	Yes	No
Antimicrobial Available	Yes	No
Bacterial Transfer Performance	The least amount of bacterial transfer of any connector tested. ¹	Exhibits a higher bacterial transfer rate than MicroClave. ¹
Flushing Performance	Highly efficient. Connector cleared of blood elements with minimal flush volumes (2 to 75 mL): ² Not recommended to change connector after blood draw.	Quest recommends flushing injection sites in accordance with hospital policy after or between injections. Replace set per CDC guidelines or hospital protocol.

Performance data on file at ICU Medical Inc. San Clemente, CA 92673. Reference ENG-433

Performance data on file at ICU Medical Inc. San Clemente, CA 92673. Q2 Engineering Test, July 7, 2014. *Additional trademarks: Robertsite® (Halkey Roberts®), Securisend (Sendal), Swan-Lock® (Codan), Ultraport™ (B. Braun Medical Inc.), Wolf-Site (Wolf Medical Supply, Inc.).

1. Ryder M, RN, PhD, 2007. Bacterial transfer through needlefree connectors: Comparison of nine different devices. Poster presented at the Annual Society for Healthcare Epidemiology of America (SHEA) conference.
 2. Breznock E, Sylvia C. BioSurg, Inc., March 2011. The in-vivo evaluation of the flushing efficiency of different designs of clear needlefree connectors.