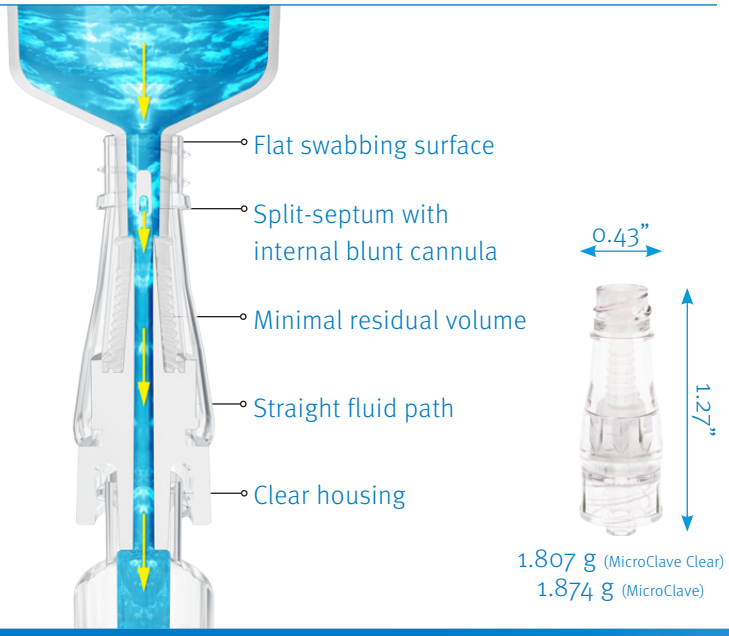
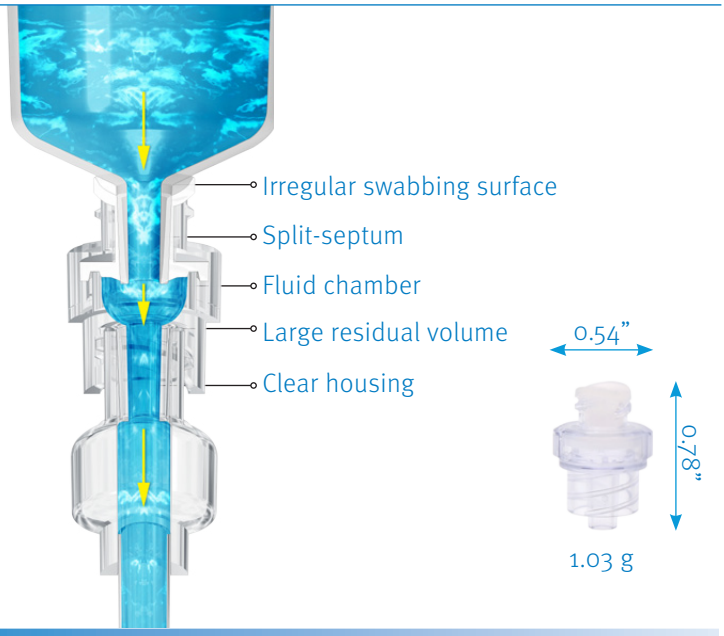
MicroClave® and Q-Syte™ Comparative Matrix

MicroClave by ICU Medical Inc.



Q-Syte by BD Medical



PRODUCT PERFORMANCE	MICROCLAVE TECHNOLOGY	Q-SYTE 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 -0.0049 mL and -2.2cm Published[1]	Negative: -0.02 mL -0.0236 mL and -10.5 cm Published[1]
Residual Volume	0.04 mL	0.08 mL (2 times larger)
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	Varies
Clamping Sequence	None required.	Yes. Clamp before disconnect.
Flow Rate	165 mL/min	642 mL/min
Clear Available	Yes	Yes
Incompatible with all O2 Tubing	Yes	No
Incompatible with all Enteral Tubing	Yes	No
Antimicrobial Available	Yes	No
Patient Comfort	Smooth housing. 20% smaller profile.	Irregular housing profile.
Bacterial Transfer Performance	The least amount of bacterial transfer of any connector tested.[2]	Among the connectors with the highest bacterial transfer rate.[2]
Flushing Performance	Highly efficient. Connector cleared of blood elements with minimal flush volumes (2 to 7.5 mL).[3] Not recommended to change connector after blood draw.	BD recommends flushing connector with a minimum of 5 mL if blood is present. If unable to clear, replacement is recommended.

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

MicroClave and Q-Syte Comparison with Oxygen and Enteral Tubing Devices

Recent concerns regarding the ability to inadvertently attach oxygen or enteral tubing to a needlefree IV connector, potentially resulting in patient harm or death, have prompted manufacturers to evaluate the risk. For the comparison below, we attempted to connect both the MicroClave and the Q-Syte to enteral or oxygen devices and, if a successful attachment was made, attempt to initiate infusion through the needlefree connector. Please note that at no time did the MicroClave allow for the infusion of oxygen or enteral feeding product, while the Q-Syte allowed flow to occur on several occasions.

Product Type	Part #	Manufacturer	MicroClave Attach/Flow	Q-Syte Attach/Flow
Enteral	52048	Abbott Nutrition	No/No	Yes/No
Enteral	20-1007	Corpak	No/No	Yes/Yes (45 mL/min)
Enteral	773667	Sherwood Davis & Geck	No/No	Yes/Yes (54 mL/min)
Enteral	8884702500	Tyco Kendall	No/No	Yes/Yes (56 mL/min)
Enteral	20-2513	Viasys	No/No	No/No
Enteral	20-2013	Corpak	No/No	No/No
Oxygen	001305GRN	Cardinal	Yes/No	Yes/No
Oxygen	MS4121	Invacare	Yes/No	Yes/Yes*
Oxygen	2002	Salter Labs	Yes/No	Yes/Yes**
Compression Therapy	VP501M	Compression Therapy Concepts	No/No	No/No
Compression Therapy	9528	Tyco Kendall	No/No	No/No

*Full air flow on all five connectors.
** Two connectors with full flow, three connectors with short flow then an abrupt disconnect.

1. Evaluation: Needleless Connectors. ECRI Institute Health Devices, Sept. 2008, Volume 37, Number 9.
2. Ryder M, James G, Pulchini E, Bickle L, Parker A. Presented at the Infusion Nursing Society Meeting, May 2011. Differences in bacterial transfer and fluid path colonization through needlefree connector-catheter systems in vitro.
3. Breznock E, Sylvia C. BioSurg, Inc., March 2011. The in vivo evaluation of the flushing efficiency of different designs of clear needlefree connectors.

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