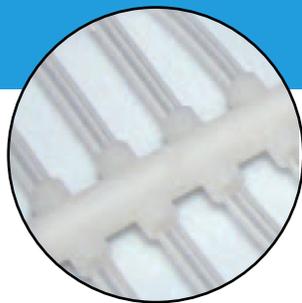


Bio-Simplex[®]

Infinite Possibilities...

Innovitve Solutions for Today's Biopharmaceutical Manufacturers



- Custom-engineered for customer-specific applications
- One-piece construction provides superior reliability and product integrity
- Economically designed for single use
- Available with your choice of bottles, bags, syringes and filters
- Made from C-Flex[®] Pharmaceutical grade thermoplastic elastomers
- Eliminates manual assembly, tie wraps, hose barbs and other connecting devices

Bio-Simplex Connection Method

Bio-Simplex technologies **eliminate the need for mechanical assembly**.

Bio-Simplex overmolded technology is **“one-piece” construction**. The overmolding material is the same as the tubing; when molded together they become one, providing an integrally bonded connection with superior strength.

Bio-Simplex overmolding **maintains inner bore diameters**.

Bio-Simplex overmolded connections intrinsically have **exceptional burst strength** that exceeds the burst pressure of the tubing.

No mechanical fasteners to fail, one-piece design.

Repeatable, **machine-driven** molding process.

No hose barbs used. Bio-Simplex overmolds maintain bore diameters throughout connectors, eliminating entrapment areas.

Traditional Connection Method

Mechanical assembly: Requires labor, overhead, inventory of specialized pieces.

Dissimilar materials: Typically the tubing, the hose barb connector and cable ties are of different materials with different expansion rates. This can result in loose connections and premature failures.

Decreased bore diameters: By design, hose barb connectors have smaller diameter bores than the mating tubing, which results in fluid flow restrictions.

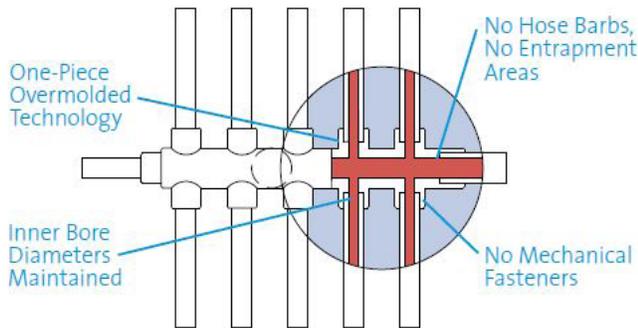
Reduced tubing strength: Tubing has to be stretched over the hose barb, reducing the wall thickness and pressure resistance.

Mechanical cable ties: Have a tendency to relax and loosen after sterilization, resulting in connection failures.

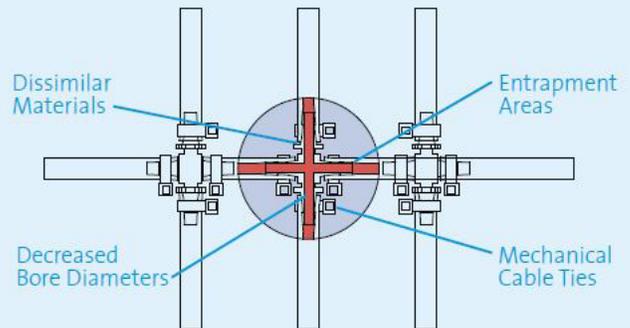
Operator dependent assembly processes: How tight mechanical cable ties become is dependent upon the individual operator.

Entrapment: When tubing is mounted onto a hose barb, areas of entrapment occur where the tubing cannot seal against the connector.

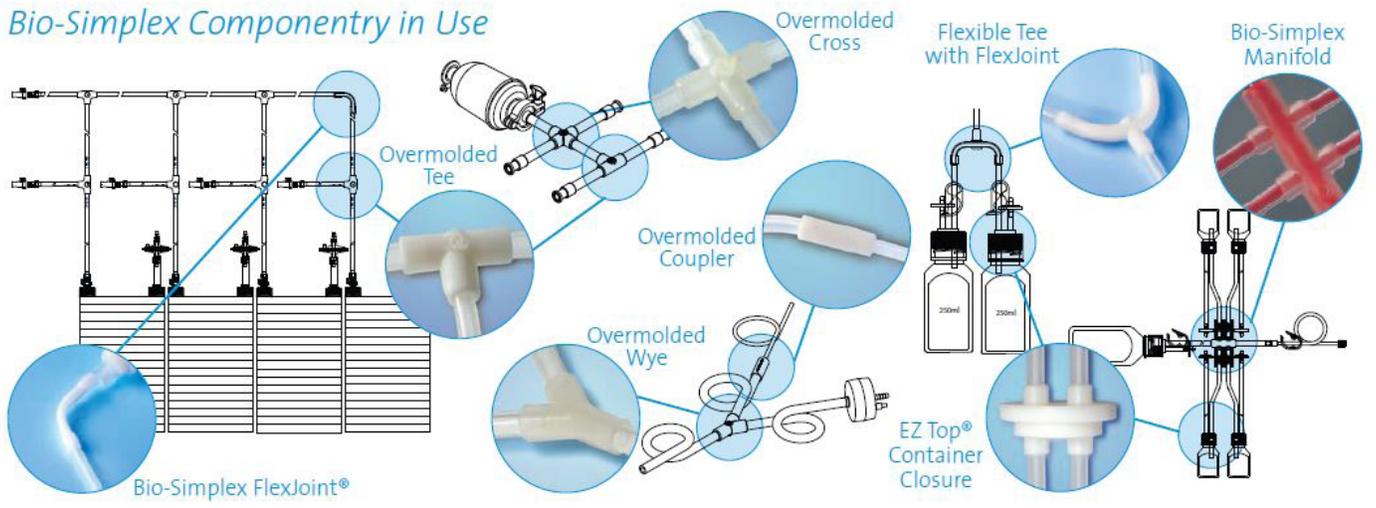
Bio-Simplex Connections



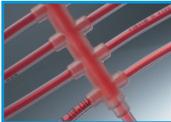
Traditional Connections



Bio-Simplex Componentry in Use



Some of the componentry used in our Bio-Simplex® custom engineered manifolds and other fluid transfer systems:

	Type	Tubing Size
 <p>Bio-Simplex Manifold - The heart of our fluid transfer system. Allows samples to be taken without compromising product sterility. Whether a single molded design (eight-port shown here) or a series of inline Tees (see previous page), we can design to your exact specifications.</p>	4 ports 6 ports 8 ports 10 ports	1/4" x 3/8" (3 mm x 6 mm) 3/8" x 5/8" (10 mm x 16 mm)
 <p>Overmolded Tee - Totally seamless fluid path. Overmolding eliminates path obstruction, fluid holdup or loss, cell damage and connection failure.</p>	1/4" (6 mm) 3/8" (10 mm) 1/2" (13 mm) 5/8" (16 mm) 3/4" (19 mm)	1/8" x 1/4" (3 mm x 6 mm) 1/4 x 3/8" (6 mm x 10 mm) 1/4" x 1/2" (6 mm x 13 mm) 3/8" x 5/8" (10 mm x 16 mm) 1/2" x 3/4" (13 mm x 19 mm)
 <p>Overmolded Cross - Similar technology to the Tee. Allows two additional seamless fluid paths.</p>	1/4" (6 mm) 3/8" (10 mm) 1/2" (13 mm) 5/8" (16 mm) 3/4" (19 mm)	1/8" x 1/4" (3 mm x 6 mm) 1/4" x 3/8" (6 mm x 10 mm) 1/4" x 1/2" (6 mm x 13 mm) 3/8" x 5/8" (10 mm x 16 mm) 1/2" x 3/4" (13 mm x 19 mm)
 <p>Overmolded Wye - Blends or divides fluid path. Overmolding holds tubing shape and maintains consistent fluid path through junction.</p>	1/4" (6 mm) 3/8" (10 mm) 1/2" (13 mm) 5/8" (16 mm) 3/4" (19 mm)	1/8" x 1/4" (3 mm x 6 mm) 1/4" x 3/8" (6 mm x 10 mm) 1/4" x 1/2" (6 mm x 13 mm) 3/8" x 5/8" (10 mm x 16 mm) 1/2" x 3/4" (13 mm x 19 mm)
 <p>Overmolded Coupler - Joins two similar-sized segments of tubing together. Overmolding creates a totally seamless path. The bond is stronger than the tubing burst strength.</p>	1/8" x 1/4" to 1/8" x 1/4" (3 mm x 6 mm to 3 mm x 6 mm) 1/4" x 3/8" to 1/4" x 3/8" (3 mm x 6 mm to 6 mm x 10 mm) 1/4" x 3/8" to 1/4" x 1/2" (3 mm x 6 mm to 6 mm x 13 mm) 1/4" x 3/8" to 1/4" x 1/2" (3 mm x 6 mm to 6 mm x 13 mm)	
 <p>Sanitary Ends - compatible with reusable bioprocess systems, one-piece construct sanitary flange design offered with polysulfone (PSF) and stainless Steel (SS) back-up cups</p>	3/4" (19 mm) mini 1-1/2" (38 mm) large	

EZ Top® Container Closures



One-piece construction. Made from pharmaceutical grade C-Flex® resin and tubing to ensure an unobstructed fluid path and extremely low levels of extractables, and to provide a secure elastomeric seal against glass and plastic surfaces.

Sizes

20mm 2 port	48mm 2 port	83B 3 port
24mm 2 port	48mm 3 port	83B 4 port
24mm 3 port	48mm Biotainer 2 port	250ml EMF
28mm 2 port	48mm Biotainer 3 port	500ml EMF 2 port
32mm 2 port	43B 2 port	500ml EMF 3 port
38mm 2 port	53B 3 port	1L EMF 2 port
38mm 3 port	53B 4 port	1L EMF 3 port
GL32 2 port	60mm 2 port	2L EMF 2 port
GL45 2 port	70mm 2 port	2L EMF 3 port
GL45 3 port	70mm 3 port	3L EMF 2 port
GL45 4 port	83B 2 port	3L EMF 3 port

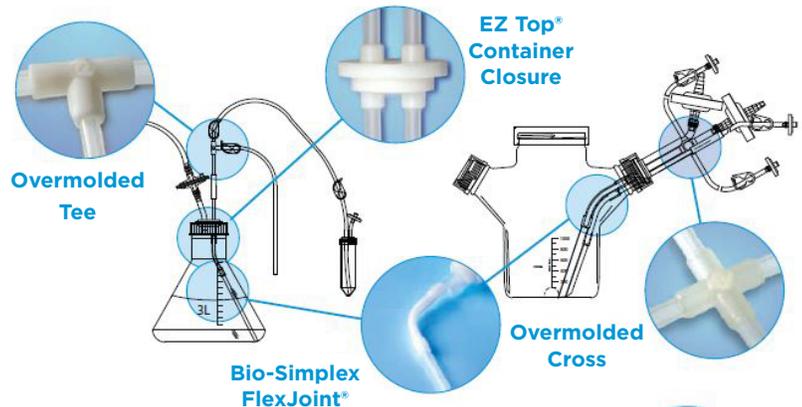
INFINITE POSSIBILITIES...

Bio-Simplex® Custom Engineered Systems:

Saint-Gobain Performance Plastics' Clearwater facility manufactures a wide variety of Bio-Simplex custom engineered systems individually designed to meet our clients' unique production requirements. Our engineers and designers work closely with yours to develop the most efficient design – one that integrates seamlessly into your production flow, that arrives ready to install, and that will not develop contamination or leakage issues down the line. Any of our Bio-Simplex assemblies can also be fitted with outside components, such as bottles, bags, syringes and filters – whatever will work the best for your needs.

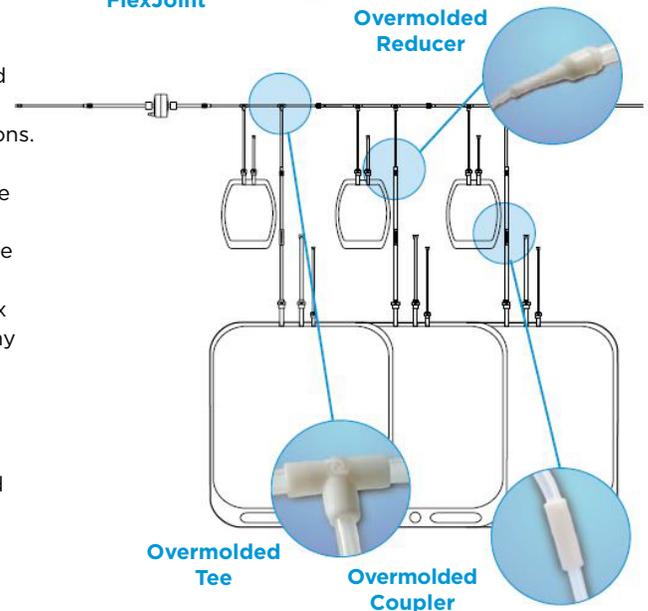
Fluid Transfer Systems:

We offer the capabilities of combining a wide variety of labware with our custom Bio-Simplex tubing assemblies for fluid transfer systems – from custom Erlenmeyer and Spinner Flask accessories to cell chamber connectors. Additionally, they can be easily combined with any of our custom engineered manifolds to make a single-use closed system unit.



Manifold Systems:

Bio-Simplex custom engineered manifold systems are designed for customer-specific applications. They replace the cumbersome manual assembly of tubing, hose bars, tie wraps and other connecting devices with a single assembly delivered ready to be put to use. A single Bio-Simplex manifold system can contain any number of sampling or storage containers and incorporate any variety of the overmolded componentry on the previous pages, including tees, wyes and reducers for connection of two different tubing diameters.



For more than four decades, Saint-Gobain Performance Plastics and its family of companies has supplied the world with innovative, high-performance polymer products for the most demanding applications. Our tradition of excellence goes back almost 350 years through our parent company, Compagnie de Saint-Gobain, one of the world's top 100 industrial corporations, with operations in 64 countries. This successful corporation has been built with the single purpose of serving the customer and a commitment to quality and leadership in each of the industries served.

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IMPORTANT: It is the user's responsibility to ensure the suitability and safety of Saint-Gobain Performance Plastics products for all intended uses and that the materials to be used comply with all applicable medical regulatory requirements. Saint-Gobain Performance Plastics assumes no responsibility for any product failures that occur due to misuse of the materials it provides arising out of the design, fabrication or application of the products into which the materials are incorporated.

WARRANTY: For a period of 12 months from the date of first sale, Saint-Gobain Performance Plastics warrants this product to be free of defects in materials and workmanship. Our only obligation will be to replace any portion proving defective, or at our option, to refund the purchase price thereof.

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