

BIOPHARMACEUTICAL
CRITICAL FLUID TRANSFER
PRODUCTS

Freudenberg Medical is a global manufacturer of high purity tubing and molded components for the biopharmaceutical and medical device industry. Our Biopharm division manufactures premium tubing, hose, and assemblies designed for bioprocessing and general fluid transfer applications. All Freudenberg products are manufactured in ISO certified cleanrooms in the United States, Germany, and Ireland. All operations adhere to strict ISO 13485 certified medical device quality systems and material certification and lot traceability are included with every product. A compendium of material tests and compliance statements is available.

Typical Applications:

- Pharmaceutical and bioprocessing
- Vaccine manufacturing
- Ultra-pure fluid transfer
- Aseptic transfer
- Single-use assemblies
- Peristaltic pumping
- Filling operations
- Laboratory use

PRODUCT PORTFOLIO

PharmaFocus® Premium Silicone Tubing

High purity reinforced, non-reinforced,
and peristaltic pump tubing

PHARMAFOCUS®
PREMIUM

HelixFlex™ TPE Tubing

Thermoplastic elastomer tubing is sealable,
weldable, and sterilizable

HelixFlex™

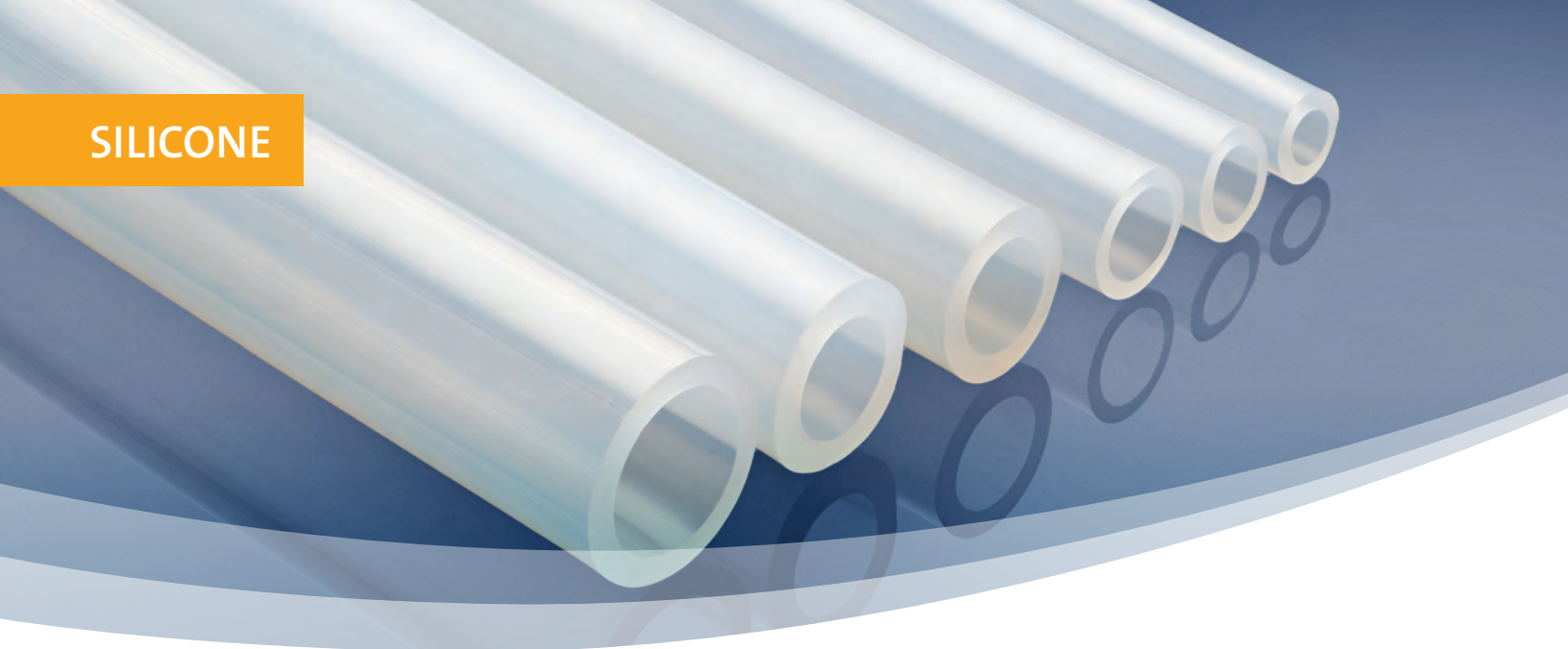
HelixTC™ Sanitary Ends for Single-use Systems

Overmolded ends in silicone combine with
PharmaFocus® Premium tubing

HelixTC™

Single-use Systems

Custom single-use assemblies for bioprocessing



PHARMAFOCUS® PREMIUM PERISTALTIC PUMP TUBING

PharmaFocus® Premium Peristaltic Pump Tubing is a high purity silicone tubing specifically designed for peristaltic pumps and pinch valves and is ideal for demanding pumping applications. Our Peristaltic Pump Tubing undergoes a stabilization process unique to Freudenberg Medical that provides the additional benefits of superior strength, performance, and longer life.

Typical hardness: 50 Shore A

PHARMAFOCUS® PREMIUM

Typical Applications:

- Dynamic pumping for precise fluid transfer
- High accuracy dosage operations
- Variable rate processing
- Consistent long-term volumetric fluid transfer
- Filling operations

PART NUMBER	LENGTH (m/ft)	ID (mm)	OD (mm)	ID (in.)	OD (in.)
ASTP-119	15 / 50	1.57	6.35	0.062	0.250
ASTP-14	15 / 50	1.57	4.75	0.062	0.187
ASTP-16	15 / 50	3.18	6.35	0.125	0.250
ASTP-120	15 / 50	3.18	7.92	0.125	0.312
ASTP-25	15 / 50	4.75	7.92	0.187	0.312
ASTP-15	15 / 50	4.75	9.53	0.187	0.375
ASTP-123	15 / 50	4.75	11.10	0.187	0.437
ASTP-17	15 / 50	6.35	9.53	0.250	0.375
ASTP-24	15 / 50	6.35	11.10	0.250	0.437
ASTP-26	15 / 50	6.35	12.70	0.250	0.500
ASTP-35	15 / 50	7.92	12.70	0.312	0.500
ASTP-36	15 / 50	9.53	14.27	0.375	0.562
ASTP-73	15 / 50	9.53	15.88	0.375	0.625
ASTP-190	15 / 50	9.52	19.05	0.375	0.750
ASTP500-4	15 / 50	12.70	19.05	0.500	0.750
ASTP-88	15 / 50	12.70	22.23	0.500	0.875
ASTP-184	15 / 50	15.88	22.23	0.625	0.875
ASTP-191	15 / 50	19.05	28.58	0.750	1.125
ASTP-90	15 / 50	19.05	31.75	0.750	1.250
ASTP-92	15 / 50	25.40	34.93	1.000	1.375

Formerly
Amesil ASTC / ASTR / ASTP

All PharmaFocus® Premium tubing includes material certification and lot traceability.

Spools available on request

PHARMAFOCUS® PREMIUM SILICONE TUBING

Designed to meet a wide range of performance requirements, PharmaFocus® Premium Silicone Tubing is ideal for critical fluid transfer applications. This tubing has been specifically formulated for use with sensitive media found in pharmaceutical and biotech processing. All PharmaFocus® Premium tubing includes material certification and lot traceability.

Typical Applications:

- Pharmaceutical and biotech processing
- Aseptic transfer
- Ultra-pure fluid transfer
- Filling operations
- Laboratory use

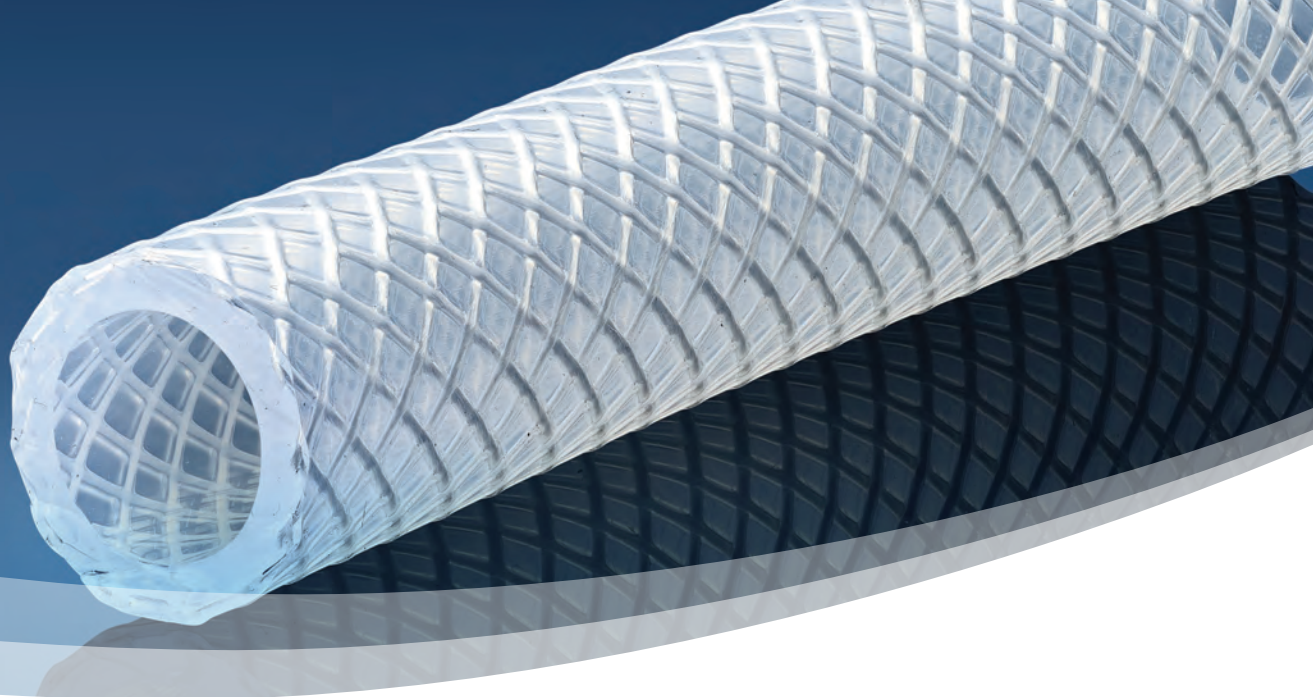
Typical hardness: 50 Shore A

PART NUMBER	LENGTH (m/ft)	ID (mm)	OD (mm)	ID (in.)	OD (in.)
ASTC062-2A50	15 / 50	1.57	4.75	0.062	0.187
ASTC062-3A50	15 / 50	1.57	6.35	0.062	0.250
ASTC078-2A50	15 / 50	1.98	5.16	0.078	0.203
ASTC078-4A50	15 / 50	1.98	8.33	0.078	0.328
ASTC093-2A50	15 / 50	2.36	5.54	0.093	0.218
ASTC125-2A50	15 / 50	3.18	6.35	0.125	0.250
ASTC125-3A50	15 / 50	3.18	7.92	0.125	0.312
ASTC125-4A50	15 / 50	3.18	9.53	0.125	0.375
ASTC156-2A50	15 / 50	3.96	7.14	0.156	0.281
ASTC156-3A50	15 / 50	3.96	8.71	0.156	0.343
ASTC156-4A50	15 / 50	3.96	10.31	0.156	0.406
ASTC187-2A50	15 / 50	4.75	7.92	0.187	0.312
ASTC187-3A50	15 / 50	4.75	9.53	0.187	0.375
ASTC187-4A50	15 / 50	4.75	11.10	0.187	0.437
ASTC250-2A50	15 / 50	6.35	9.53	0.250	0.375
ASTC250-3A50	15 / 50	6.35	11.10	0.250	0.437
ASTC250-4A50	15 / 50	6.35	12.70	0.250	0.500
ASTC250-5A50	15 / 50	6.35	15.88	0.250	0.625
ASTC312-2A50	15 / 50	7.92	11.10	0.312	0.437
ASTC312-3A50	15 / 50	7.92	12.70	0.312	0.500
ASTC312-4A50	15 / 50	7.92	14.27	0.312	0.562
ASTC375-2A50	15 / 50	9.53	12.70	0.375	0.500
ASTC375-3A50	15 / 50	9.53	14.27	0.375	0.562
ASTC375-4A50	15 / 50	9.53	15.88	0.375	0.625
ASTC375-5A50	15 / 50	9.53	19.05	0.375	0.750
ASTC500-2A50	15 / 50	12.70	15.88	0.500	0.625
ASTC500-3A50	15 / 50	12.70	17.45	0.500	0.687
ASTC500-4A50	15 / 50	12.70	19.05	0.500	0.750
ASTC500-5A50	15 / 50	12.70	22.23	0.500	0.875
ASTC562-3A50	15 / 50	14.27	19.05	0.562	0.750
ASTC625-4A50	15 / 50	15.88	22.23	0.625	0.875
ASTC750-4A50	15 / 50	19.05	25.40	0.750	1.000
ASTC750-5A50	15 / 50	19.05	28.58	0.750	1.125
ASTC750-6A50	15 / 50	19.05	31.75	0.750	1.250
ASTC875-4A50	15 / 50	22.23	28.58	0.875	1.125
ASTC875-5A50	15 / 50	22.23	31.75	0.875	1.250
ASTC1000-4A50	15 / 50	25.40	31.75	1.000	1.250
ASTC1000-5A50	15 / 50	25.40	34.93	1.000	1.375

Formerly
Amesil ASTC/ASTR/ASTP

All PharmaFocus® Premium tubing includes material certification and lot traceability.

Spools available on request



PHARMAFOCUS® PREMIUM REINFORCED TUBING

PHARMAFOCUS® PREMIUM

PharmaFocus® Premium Reinforced Silicone Tubing is available with single-braid reinforcement for enhanced performance in high pressure and vacuum applications. All reinforced silicone tubing is manufactured with an inner layer of platinum-cured silicone for ultra-pure fluid transfer and meets a diverse range of pharmaceutical and bioprocessing applications.

Engineered with superior flexibility, our premium tubing allows for excellent resilience and bend radius. To meet a diverse range of application needs, PharmaFocus® Premium Reinforced Tubing is constructed to prevent kinking and compression and can withstand extreme temperature and pressure. All PharmaFocus® Premium tubing includes material certification and lot traceability.

Typical hardness: 65 Shore A

Typical Applications:

- Pharmaceutical and biotech processing
- High volume ultra-pure fluid transfer
- Aseptic transfer
- Purification processes
- High pressure and bulk liquid transfers
- Load Cells
- Skid transfer
- Process lines

PART NUMBER	LENGTH (m/ft)	ID (mm)	OD (mm)	ID (in.)	OD (in.)
ASTR187-A65	15 / 50	4.75	10.34	0.187	0.407
ASTR250-A65	15 / 50	6.35	12.45	0.250	0.490
ASTR312-A65	15 / 50	7.92	15.04	0.312	0.592
ASTR375-A65	15 / 50	9.53	15.88	0.375	0.625
ASTR500-A65	15 / 50	12.70	20.32	0.500	0.800
ASTR625-A65	15 / 50	15.88	24.51	0.625	0.965
ASTR750-A65	15 / 50	19.05	27.94	0.750	1.100
ASTR875-A65	15 / 50	22.23	31.37	0.875	1.235
ASTR1000-A65	15 / 50	25.40	34.54	1.000	1.360

Formerly
Amesil ASTC / ASTR / ASTP

All PharmaFocus® Premium
tubing includes material
certification and lot traceability.

Spools available on request



TPE TUBING FOR BIOPROCESSING STERILIZABLE, WELDABLE AND SEALABLE

Freudenberg Medical manufactures a thermoplastic elastomer TPE tubing to suit a wide range of high-performance fluid transfer requirements for the pharmaceutical and biotech industry.

HelixFlex™ tubing is produced in a certified cleanroom using biologically compatible TPE material. HelixFlex™ is heat sealable, weldable, and sterilizable by autoclave, gamma irradiation, x-ray, and e-beam.

An ideal choice for demanding fluid transfer processes, bioprocess lines, filling and sampling, and peristaltic pump applications. All tubing includes material certification and lot traceability.

Typical hardness: 70 Shore A

PART NUMBER	LENGTH (m/ft)	ID x OD (mm)	ID x OD (in.)
HF125-2A	15 / 50	3.2 x 6.4	1/8 x 1/4
HF187-2A	15 / 50	4.8 x 8.0	3/16 x 5/16
HF187-3A	15 / 50	4.8 x 9.5	3/16 x 3/8
HF250-2A	15 / 50	6.4 x 9.5	1/4 x 3/8
HF250-3A	15 / 50	6.4 x 11.2	1/4 x 7/16
HF250-4A	15 / 50	6.4 x 12.7	1/4 x 1/2
HF312-3A	15 / 50	7.9 x 12.7	5/16 x 1/2
HF375-2A	15 / 50	9.6 x 12.7	3/8 x 1/2
HF375-3A	15 / 50	9.6 x 14.3	3/8 x 9/16

Full validation package available upon request

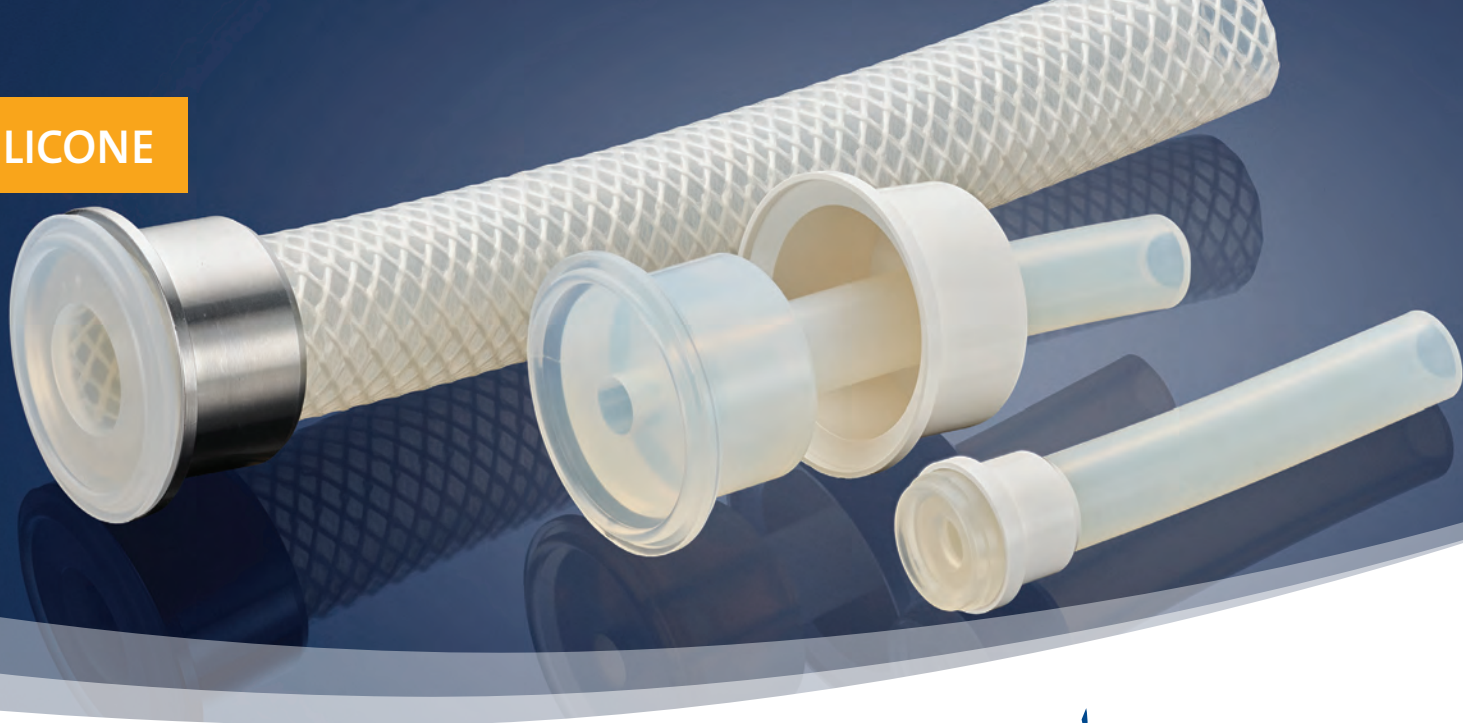


Advantages / Benefits:

- Meets critical demands of biopharma fluid transfer
- Excellent heat seal and sterile weldability
- Safe material solution for bioprocessing

Typical Applications:

- Pharmaceutical and biotech processing
- Vaccine manufacturing
- Ultra-pure sterile fluid transfer
- Filling and sampling operations
- Laboratory use
- Media processing
- Peristaltic pumping



SANITARY ENDS FOR SINGLE-USE SYSTEMS

Freudenberg Medical manufactures HelixTC™ overmolded sanitary ends for fluid transfer applications. An alternative to traditional barbed TC connections, HelixTC™ connects with PharmaFocus® Premium silicone tubing to produce a final assembly for aseptic manufacturing.

Molded sanitary ends are available in standard and mini molded TC styles up to 1 ½ inch or 38mm OD. Custom sizes available.

HelixTC™ ends greatly reduce bioburden entrapment situations associated with barb-type fittings and are an ideal choice for critical fluid transfer applications in pharmaceutical & bioprocess operations.

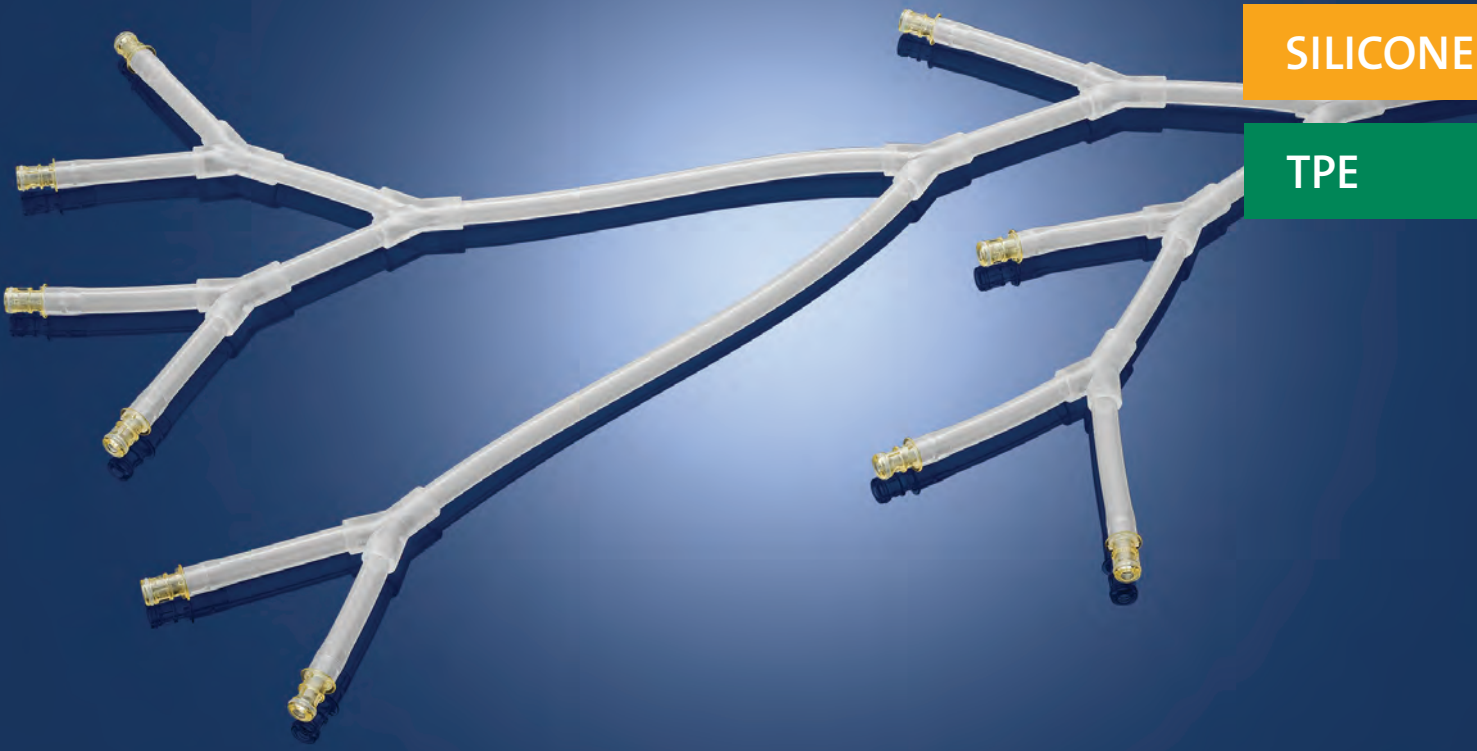
All products are produced in a certified cleanroom and include material certification and lot traceability.

Key Features:

- Excellent component for single-use systems
- Certified free of animal derived ingredients
- Smooth interior for excellent flow & performance
- Available in standard and mini sanitary ends
- Product includes molded gasket
- Available with stainless or polysulfone back-up cups
- Documented quality control
- Custom assemblies made to order

Typical Applications:

- Pharmaceutical and bioprocessing
- Vaccine manufacturing
- Ultra-pure sterile fluid transfer
- Aseptic transfer
- Filling operations
- Laboratory use
- Media processing



SILICONE

TPE

SINGLE-USE ASSEMBLIES

Freudenberg can design and build single-use assemblies for critical bioprocessing applications. With expertise in controlled cleanroom extrusion and molding, Freudenberg can create custom single-use assemblies to ensure safe fluid transport for biopharmaceuticals. As a one-stop shop, Freudenberg uses your design specification to provide custom solutions combining high purity tubing, connectors, overmolded sanitary ends, manifolds, T- and Y-molds, and other ancillary products.



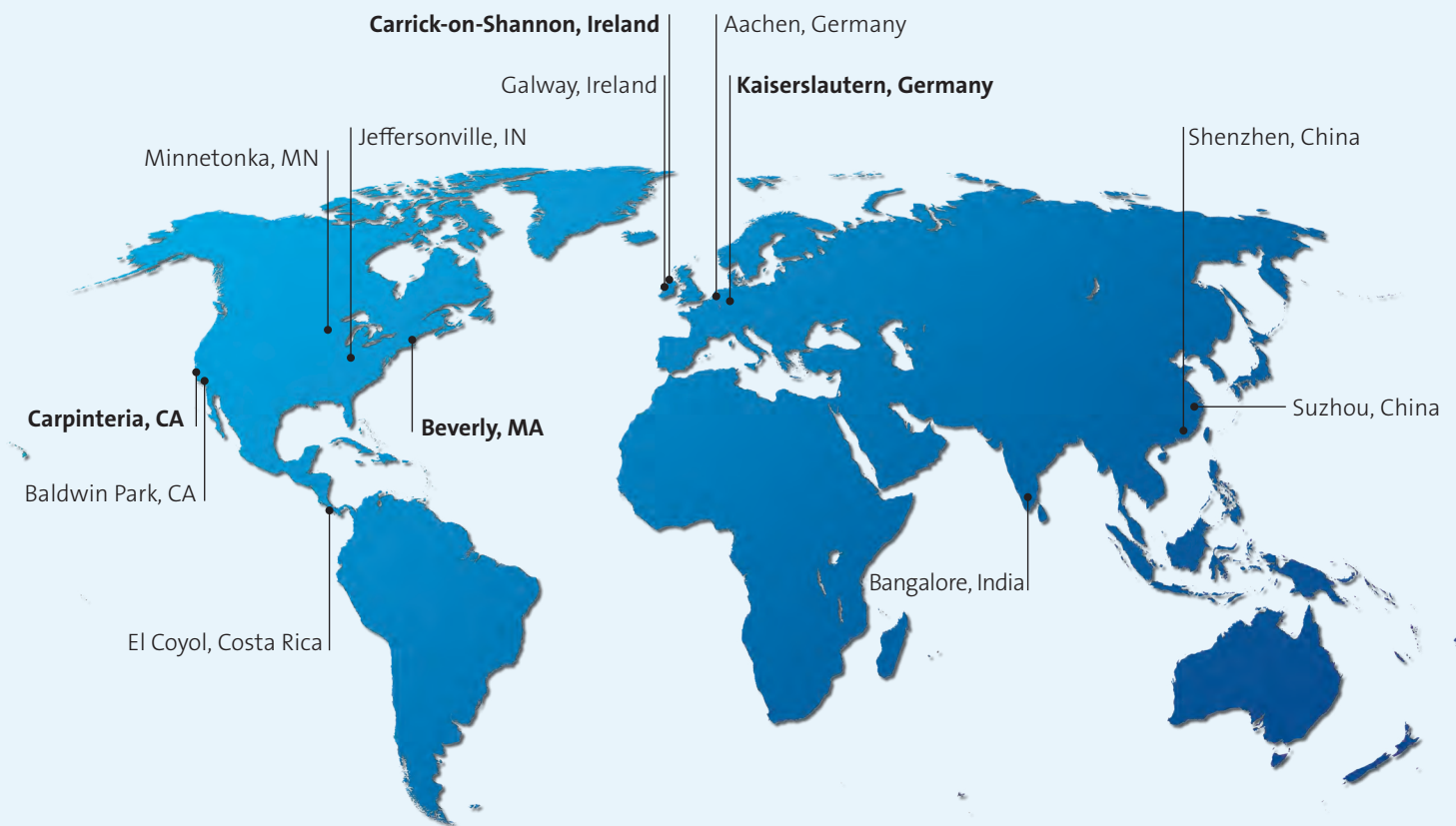
SPECIALTY MOLDING SOLUTIONS

Freudenberg Medical brings deep engineering expertise in the molding, overmolding, 2K molding, and insert molding of silicone and thermoplastic components. With manufacturing operations in the USA, Costa Rica, Germany and China, we pride ourselves on delivering world class products to our pharmaceutical and medical device clients around the world.

Freudenberg Medical partners with all raw material suppliers to source only the highest quality medical and pharma-grade raw materials supported by certification and documentation. We operate in controlled cleanrooms, using state of the art equipment, and stay competitive by combining a high engineer-to-customer ratio, lean manufacturing principles and validated processes including Scientific Injection Molding.

We are a partner for custom product solutions, guiding and coordinating your project with dedicated project management teams - from concept to first parts and into series production. Our dedicated quality management team will work with you to deliver high quality products using state-of-the-art validation principles or customized for your needs.

GLOBAL RESOURCES LOCAL SOLUTIONS



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