Saint-Gobain
Life Sciences –
Bioprocess Solutions

Welded (top) and sealed tubing

C-Flex® Tubing

for Biopharmaceutical Applications

Trust the Original

C-Flex® is the original patented thermoplastic elastomer tubing specifically designed to meet the critical demands of pharmaceutical and biopharmaceutical applications for fluid processing with excellent heat seal and sterile weld capabilities.

For over 25 years, C-Flex has been the thermoplastic elastomer tubing most widely used and validated by the world's leading pharmaceutical and biopharmaceutical companies. Each coil of C-Flex tubing is extruded to precise ID and wall dimensions. All tubing is formulated to meet the standards of the biopharmaceutical industry and is quality tested before leaving the Saint-Gobain Performance Plastics production facilities.

The Material Difference

C-Flex tubing is part of a family of TPE tubing offering the widest range of formulations and sizes in the industry including translucent tubing for fluid flow visibility, opaque tubing for application when sensitivity for light is required and custom formulations from 50A to 80A durometer. C-Flex is also available as **C-Flex Braided** to use in applications where a thermoplastic tube is desired, but the pressure requirements exceed those allowable by a non-reinforced thermoplastic material. All are available in custom sizes, lengths and packaging. C-Flex tubing has a secure global supply chain with redundant manufacturing sites in the United States and Europe with validated manufacturing processes.

Easy Validation Process

C-Flex tubing is manufactured from pharmaceutical-grade thermoplastic materials and is fully characterized, validated and tested to a variety of specifications including USP Class VI, ISO 10993-3 (Ames Genotoxicity), ISO 10993-4 (Hemolysis, Indirect), ISO 10993-5 (Cytotoxicity, In-Vitro), ISO 10993-11 (Systemic Toxicity, In-Vivo) and European Pharmacopeia. Extensive biological, chemical, physical properties and extractable testing performed on unsterilized and sterilized C-Flex tubing is available to assist in the validation of C-Flex application.

Features / Benefits

- Sealable and weldable either pre- or post-sterilization
- Sterilizable by gamma irradiation and autoclave
- **Validation package** available for all C-Flex® commercial formulations
- Moldable, bondable and formable for single-use assemblies and overmolds
- Non-pyrogenic, non-cytotoxic, non-hemolytic
- Remains flexible from -45ºC to 135ºC (-50ºF to 275ºF)
- Significantly less permeable than silicone
- Smooth inner bore for superior fluid flow
- All formulas are Animal-Derived Component Free

Single-use Applications

- Aseptic sealing disconnections
- Aseptic welding connections
- Ideal for use in **single-use assemblies**
- Buffer and media preparation
- Cell culture operations
- Purification operations
- Diagnostic products
- Biopharma manufacturing
- Single-use fluid transfer sets
- Tubing and bags manifolds
- Laboratory R&D
- High-purity water systems

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Typical Physical Properties of C-Flex®

Property	Reference	FORMULATION		
		374	082	072
Appearance	–	Translucent	Translucent	Opaque
Durometer, Shore A	ASTM D2240	60	60	60
Tensile Strength, psi	ASTM D412	1190	1106	1196
Elongation, %	ASTM D412	915	874	862
Tensile Modulus, @100%/300%, psi	ASTM D412	244/385	256/400	247/389
Tensile Set @ 300% Stretch	ASTM D412	24	29	26
Compression Set Constant Defl., "B" (22hrs @ 70ºC), %	ASTM D395	83	89	86
Brittle Point, ºC	ASTM D746	-65	-64	-66
Low Temperature Flexibility @ -45ºC	ASTM D380	Pass	Pass	Pass

Chemical Resistance	
Acids, Dilute/Weak	Acceptable
Acids, Strong/Concentrated	Acceptable
Bases, Dilute/Weak	Acceptable
Bases, Strong/Concentrated	Acceptable
Salts	Acceptable
High-purity Water	Acceptable
Alcohol	Not recommended*
Oil/Water Emulsion	Test before using
Organic Solvent	Not recommended

*Brief or intermittent contact is acceptable.

NOTE: It is the users responsibility to insure the suitability and safety of C-Flex for all intended uses/applications.

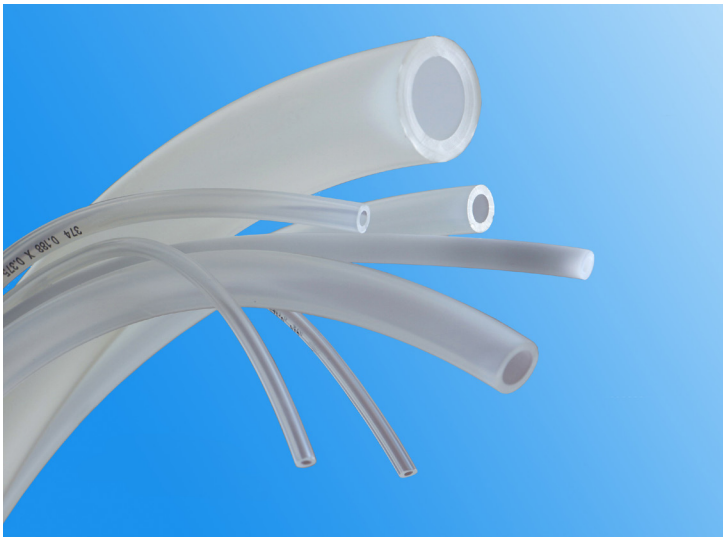
Sterilization Methods

- Autoclavable – one time 30 minute cycle at 121ºC
- Radiation – up to 40kGy

NOTE: C-Flex tubing will deteriorate with repeated autoclaving. Radiation is the recommended method of sterilization for all C-Flex thermoplastic materials.

Characteristics

The manufacturing process is carefully controlled from raw material through production. Inspection and lot traceability information is readily accessible as batch numbers are assigned. All packages are identified by external labeling on both the bag and the crush-proof box.



C-Flex comes in a wide variety of sizes and formulations.

One-piece overmolded C-Flex manifold maintains inner bore diameters with superior reliability and product integrity.

C-Flex® Tubing Selection Guide

Tubing Catalog Part Numbers (1)	Packaging	ID x OD x Wall (inch decimals)	ID x OD (inch fractions)	ID x OD x Wall (millimeters)
xxx-031-1	50′ coils (15 m)	0.031 x 0.094 x 0.031	1/32 x 3/32	0,8 x 2,4 x 0,8
xxx-063-1	50′ coils (15 m)	0.063 x 0.125 x 0.031	1/16 x 1/8	1,6 x 3,2 x 0,8
xxx-063-2	50′ coils (15 m)	0.063 x 0.188 x 0.062	1/16 x 3/16	1,6 x 4,8 x 1,6
xxx-125-2	50′ coils (15 m)	0.125 x 0.250 x 0.062	1/8 x 1/4	3,2 x 6,4 x 1,6
xxx-188-2 xxx-188-3	50′ coils (15 m) 50′ coils (15 m)	0.188 x 0.313 x 0.062 0.188 x 0.375 x 0.094	3/16 x 5/16 3/16 x 3/8	4,8 x 8,0 x 1,6 4,8 x 9,5 x 2,4
xxx-250-2 xxx-250-3 xxx-250-4	50′ coils (15 m) 50′ coils (15 m) 50′ coils (15 m)	0.250 x 0.375 x 0.062 0.250 x 0.438 x 0.094 0.250 x 0.500 x 0.125	1/4 x 3/8 1/4 x 7/16 1/4 x 1/2	6,4 x 9,5 x 1,6 6,4 x 11,2 x 2,4 6,4 x 12,7 x 3,2
xxx-313-3	50′ coils (15 m)	0.313 x 0.500 x 0.094	5/16 x 1/2	7,9 x 12,7 x 2.4
xxx-375-2 xxx-375-3 xxx-375-4	50′ coils (15 m) 50′ coils (15 m) 50′ coils (15 m)	0.375 x 0.500 x 0.062 0.375 x 0.563 x 0.094 0.375 x 0.625 x 0.125	3/8 x 1/2 3/8 x 9/16 3/8 x 5/8	9,6 x 12,7 x 1,6 9,6 x 14,3 x 2,4 9,6 x 15,9 x 3,2
xxx-500-3 xxx-500-4	50′ coils (15 m)	0.500 x 0.688 x 0.094 0.500 x 0.750 x 0.125	1/2 x 11/16 1/2 x 3/4	12,7 x 17,4 x 2,4 12,7 x 19,1 x 3,2
xxx-625-4	50′ coils (15 m)	0.625 x 0.875 x 0.125	5/8 x 7/8	15,9 x 22,2 x 3,2
xxx-750-4 xxx-750-6 xxx-750-8	15′ coils (4,5 m) 15′ coils (4,5 m)	0.750 x 1.00 x 0.125 0.750 x 1.125 x 0.188 0.750 x 1.250 x 0.250	3/4 x 1 3/4 x 1-1/8 3/4 x 1-1/4	19,0 x 25,4 x 3,2 19,0 x 28,3 x 4,8 19,0 x 31,7 x 6,4
xxx-1000-6 xxx-1000-8	15′ coils (4,5 m) 15′ coils (4,5 m)	1.00 x 1.375 x 0.188 1.00 x 1.500 x 0.250	1 x 1-3/8 1 x 1-1/2	25,4 x 34,9 x 4,8 25,4 x 38,1 x 6,4

(1) FORMULAS: (xxx)
072 - Opaque
082 - Translucent
374 - Translucent

Saint-Gobain Performance Plastics' manufacturing facilities have the ability to create a variety of sizes or coil lengths for your particular application needs. Contact us for a quote to meet your specific requirements.

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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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