

FLEX™ Tubing Products

The Right Tubing...at the Right Price

Quality

Premium-quality **FLEX** tubing is made from the finest virgin resins, with no fillers or extenders. Our precision extrusion process ensures close tolerances and excellent concentricity for reliable, leakproof connections. Adherence to the strict guide lines of our ISO 9001: 2000-registered



Quality Management System ensures consistent tubing – lot after lot – with full traceability.

Performance

FLEX Tubing Products are available in a variety of materials and sizes to meet virtually any fluid transfer need. And we offer a full range of regulatory compliance for food, beverage, dairy, pharmaceutical, biotechnology and medical applications.

Service

We support you with responsive, personalized service from your initial inquiry to the completion of your order. And our new website allows you to check tubing specifications and submit technical questions and inquiries at your convenience, 24 hours a day.










Experience

FLEX Tubing Products has more than 25 years of extrusion experience. We've manufactured millions of feet of tubing and helped select and validate the correct product for hundreds of applications. Our customers have come to rely on us for fair prices and on-time delivery of tubing that always meets specifications.

Take advantage of our long history of quality by demanding **FLEX** Tubing Products for your fluid handling needs. For more information call (313) 383-5945 or visit our website at www.DavidsonProducts.com.

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Selection Guide for FLEX™ Tubing Products

FLEX Tubing Products	ClearFLEX 60	ClearFLEX 70	FuelFLEX 65	BraidFLEX 70N	FLEX GP70	Ether-PUR FLEX 84	Ester-PUR FLEX 85	PolyFLEX 50
Resin	PVC	PVC	PVC	PVC, Reinf.	PVC	PUR Ether	PUR Ester	LDPE
Certifications	Food Grade USP VI USDA	Food Grade NSF-51 USP VI 3A / USDA	—	Food Grade USDA NSF-51	Food Grade USDA	Food Grade	Food Grade	Food Grade USDA
Durometer (Shore)	60 (A)	70 (A)	65 (A)	70 (A)	70 (A)	84 (A)	85 (A)	50 (D)
Specific Gravity	1.19	1.20	1.23	1.20	1.21	1.12	1.20	0.92
Operating Temperature Range (°F)	-25 to 160	-10 to 175	-15 to 165	-5 to 180	-10 to 175	-70 to to 175	-70 to 175	-100 to 175
Tensile Strength, psi	1650	2200	1900	2000	2400	5500	5000	1700
Color	Crystal Clear	Crystal Clear	Transparent Yellow	Clear	Crystal Clear	Transparent	Transparent	Translucent
Odor	Slight	Slight	Slight	Slight	Slight	None	Slight	Slight
Taste Imparted	None	None	N/A	None	None	N/A	N/A	None
Tear Strength	Good	Good	Good	Very Good	Good	Excellent	Excellent	Very Good
Bend Radius	4 x O.D.	5 x O.D.	4 x O.D.	6 x O.D.	5 x O.D.	6 x O.D.	6 x O.D.	8 x O.D.
Elongation (%)	450	400	425	350	350	500	500	600
Flame Resistance	Self-Ext.	Self-Ext.	Self-Ext.	Self-Ext.	Self-Ext.	Burns	Burns	Slow Burn
Abrasion Resistance	Very Good	Very Good	Very Good	Good	Very Good	Excellent	Excellent	Good
Corrosion Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Sterilization of FLEX Brand Tubing Products: ClearFLEX 60, ClearFLEX 70 can be sterilized by autoclaving, gas or chemical methods.

BraidFLEX 70N can be sterilized by gas or chemical methods. Ether-PUR FLEX 84 and Ester-PUR FLEX 85 can be sterilized by gas.

PolyFLEX 50 can be sterilized by chemical methods.

- **Autoclaving** (121°C, 15 psig for 20 minutes) – Clean and rinse tubing with distilled water before autoclaving. Certain chemicals which have no appreciable effect on resins at room temperature may cause deterioration at autoclaving temperatures unless removed with distilled water beforehand.
- **Gas** – ethylene oxide formaldehyde.
- **Chemicals** – benzalkonium chloride, formalin, ethanol, etc.

For more information, call (313) 383-5945 or Fax (313) 388-8447.

Tubing Conversion Chart

FLEX Tubing Products	ClearFLEX 60	ClearFLEX 70	FuelFLEX 65	BraidFLEX 70N	FLEX GP70	Ether-PUR FLEX 84	Ester-PUR FLEX 85	PolyFLEX 50
Nalge Nunc International	Nalgene ¹ 180	Nalgene 380	Nalgene 780	Nalgene 980	—	Nalgene 290	Nalgene 280	Nalgene 489
Saint-Gobain Performance Plastics Corporation	Tygon ² R-3603	Tygon B-44-3/ B-44-4X/ S-50-HL	Tygon F-4040-A	Tygon B-44-4X I.B./NT-80	Vincon ²	—	Tygothane ²	—
Thermoplastic Processes	—	—	Excelon ³ GO-1480	Excelon Braided	Excelon RNT-1065	—	—	Excelite ³
J. P. Stevens	—	—	—	—	—	Stevens MP-1880	Stevens MP-1485	—
NewAge Industries	—	—	—	Nylobrade ⁴	Clearflo ⁴	—	Superthane ⁴	—

¹ Registered trademark of Nalge Nunc International

² Registered trademarks of Saint-Gobain Performance Plastics

³ Registered trademark of Thermoplastic Processes, Inc.

⁴ Registered trademark of NewAge Industries, Inc.

ClearFLEX™ 60 PVC Tubing Products

All ClearFLEX 60 PVC tubing products offer the following features:

- Crystal clarity for visible flow
- Compliance with USP Class VI and USDA standards
- Compliance with FDA CFR 21 for food packaging
- May be sterilized by autoclaving, gas or chemical methods (see page 3)

ClearFLEX 60 Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8160-4170	1/16		1/8	1/32	48	100
8160-4220	3/32		5/32	1/32	42	100
8160-4245	1/8		1/4	1/16	50	100
8160-4295	3/16		5/16	1/16	36	100
8160-4335	1/4		3/8	1/16	30	100
8160-4340	1/4		7/16	3/32	40	100
8160-4345	1/4		1/2	1/8	46	100
8160-4390	5/16		7/16	1/16	28	100
8160-4400	5/16		9/16	1/8	42	100
8160-4430	3/8		1/2	1/16	22	100
8160-4435	3/8		9/16	3/32	32	100
8160-4440	3/8		5/8	1/8	40	100
8160-4505	1/2		5/8	1/16	20	100
8160-4510	1/2		11/16	3/32	26	100
8160-4515	1/2		3/4	1/8	30	100
8160-4570	5/8		7/8	1/8	26	100
8160-2605	3/4		1	1/8	22	50
8160-2675	1		1-1/4	1/8	18	50
8160-2685	1		1-3/8	3/16	26	50
8160-2690	1		1-1/2	1/4	34	50
8160-2715	1-1/4		1-5/8	3/16	22	50
8160-2755	1-1/2		2	1/4	24	50
8160-2790	2		2-1/2	1/4	18	50

ClearFLEX V60 Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8160-2310	3/16		9/16	3/16	62	50
8160-2350	1/4		5/8	3/16	56	50
8160-2460	3/8		7/8	1/4	54	50
8160-2530	1/2		1-1/8	5/16	52	50
8160-2585	5/8		1-3/8	3/8	56	50
8160-2625	3/4		1-1/2	3/8	46	50
8160-2700	1		2	1/2	46	50

ClearFLEX M60 Cat. No.	Size, mm				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8160-0102	1.0		2.0	0.5	46	100
8160-0204	2.0		4.0	1.0	46	100
8160-0406	4.0		6.0	1.0	32	100
8160-0508	5.0		8.0	1.5	34	100
8160-0610	6.0		10.0	2.0	38	100
8160-0710	7.0		10.0	1.5	28	100
8160-0812	8.0		12.0	2.0	32	100
8160-0913	9.0		13.0	2.0	28	100
8160-1014	10.0		14.0	2.0	26	100
8160-1216	12.0		16.0	2.0	24	100
8160-1823	18.0		23.0	2.5	20	50
8160-2025	20.0		25.0	2.5	18	50



ClearFLEX™ 60 Premium PVC Tubing

Features and Benefits:

- Long service life—non-aging, non-oxidizing
- Smooth inner wall resists build-up
- Soft and flexible—easy to slip over fittings
- Tight bend radius
- Outstanding flex life

Recommended Applications:

- Peristaltic pumps
- Lab and research work
- Media manufacture/transfer
- Food/beverage processing
- Condenser coolant lines
- Vapor transfer
- Toys

ClearFLEX™ V60 Vacuum PVC Tubing

Features and Benefits:

- Extra heavy wall
- Withstands full vacuum (30" Hg) at room temperature and 26" Hg at 140°F
- Excellent resistance to corrosive atmospheres
- Kink-proof

ClearFLEX™ M60 Metric PVC Tubing

Features and Benefits:

- All the advantages of ClearFLEX 60, but in metric sizes
- Eliminates leaky connections typical of "close-to-size" English-measure tubing



ClearFLEX™ 70 Premium PVC Tubing

ClearFLEX 70 PVC Tubing products offer the following features:

Features and Benefits:

- Complies with FDA CFR 21 for food packaging
- Complies with USP Class VI, NSF-51, 3A and USDA Standards
- Non-toxic
- Will not impart taste or odors
- Resistant to alkaline cleaners and sanitizers
- Flexible and easy to install and fit around corners—minimizes couplings
- Clear for visual inspection and flow control

Recommended Applications:

- Transfer of foods, beverages, syrups, cooking oils, flavor extracts and preservatives
- Transfer of milk and milk products
- Administration of parenterals
- Dialysis
- Blood transfer
- Drainage lines
- Irrigation lines

ClearFLEX 70 Cat. No.	Size, in.			Oper. Pressure, psig @ 73°F	Case Qty., ft.		
	ID	x	OD			x	Wall
8170-4170	1/16		1/8		1/32	66	100
8170-4220	3/32		5/32		1/32	56	100
8170-4245	1/8		1/4		1/16	68	100
8170-4295	3/16		5/16		1/16	54	100
8170-4335	1/4		3/8		1/16	46	100
8170-4340	1/4		7/16		3/32	58	100
8170-4345	1/4		1/2		1/8	70	100
8170-4390	5/16		7/16		1/16	40	100
8170-4400	5/16		9/16		1/8	62	100
8170-4430	3/8		1/2		1/16	34	100
8170-4435	3/8		9/16		3/32	48	100
8170-4440	3/8		5/8		1/8	58	100
8170-4505	1/2		5/8		1/16	28	100
8170-4510	1/2		11/16		3/32	38	100
8170-4515	1/2		3/4		1/8	44	100
8170-4570	5/8		7/8		1/8	38	100
8170-2605	3/4		1		1/8	34	50
8170-2675	1		1-1/4		1/8	28	50
8170-2685	1		1-3/8		3/16	38	50
8170-2710	1-1/4		1-1/2		1/8	24	50
8170-2715	1-1/4		1-5/8		3/16	34	50
8170-2750	1-1/2		1-7/8		3/16	28	50
8170-2755	1-1/2		2		1/4	36	50
8170-2790	2		2-1/2		1/4	28	50

NOTE:

The operating pressures for FLEX™ Tubing Products decrease as the temperature increases. The operating pressure for any given formulation and size at 125°F (52°C) is half that at 73°F (23°C).



FuelFLEX™ 65 PVC Fuel Tubing

Features and Benefits:

- Flexible and easy to install (65A durometer)
- Resists swelling and hardening
- Easy-to-identify transparent yellow

Recommended Applications:

- For intermittent use with petroleum-based products
- Fuel drain lines, vent tubes and overflow tubes
- Transfer of gasoline, heating oils, cutting compounds and coolants
- Lab handling of distillates
- NOT intended for use with foods or beverages

FuelFLEX 65 Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8365-4230	3/32		3/16	3/64	54	100
8365-4245	1/8		1/4	1/16	62	100
8365-4295	3/16		5/16	1/16	48	100
8365-4335	1/4		3/8	1/16	40	100
8365-4390	5/16		7/16	1/16	36	100
8365-4430	3/8		1/2	1/16	30	100
8365-4465	7/16		5/8	3/32	40	100
8365-4515	1/2		3/4	1/8	40	100
8365-4570	5/8		7/8	1/8	34	100
8365-2605	3/4		1	1/8	30	50

BraidFLEX™ 70N Braided PVC Tubing

Features and Benefits:

- Now complies with NSF-51
- Complies with FDA CFR 21 for food packaging
- Embedded braid prevents material entrapment, ensures easy cleaning
- Easy to bend into place
- Flexible; permits tight clamping for leakproof connections
- Maximum working pressure clearly printed on tubing
- Clear tubing allows full visual flow monitoring

Recommended Applications:

- Transfer lines
- Higher-pressure applications, including lab, food and beverage use
- Pneumatic circuitry
- Cell culture
- Use with insert/barbed fittings
- NOT recommended for vacuum applications

BraidFLEX 70N Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8470-4300	3/16		3/8	3/32	276	100
8470-7300	3/16		3/8	3/32	276	250
8470-4340	1/4		7/16	3/32	276	100
8470-7340	1/4		7/16	3/32	276	250
8470-4395	5/16		1/2	3/32	276	100
8470-4435	3/8		9/16	3/32	250	100
8470-7435	3/8		9/16	3/32	250	250
8470-4515	1/2		3/4	1/8	230	100
8470-7515	1/2		3/4	1/8	230	250
8470-4570	5/8		7/8	1/8	230	100
8470-7570	5/8		7/8	1/8	230	250
8470-2605	3/4		1	1/8	176	50
8470-7605	3/4		1	1/8	176	250
8470-2680	1		1-5/16	5/32	140	50
8470-7680	1		1-5/16	5/32	140	250
8470-2715	1-1/4		1-5/8	3/16	100	50
8470-2750	1-1/2		1-7/8	3/16	80	50
8470-2790	2		2-1/2	1/4	70	50



FLEX™ GP70 PVC Tubing – Clear

Features and Benefits:

- Clear and flexible
- Complies with FDA CFR 21 for food packaging
- Resists aging
- Resistant to a broad range of chemicals
- Excellent wearability
- Smooth inner wall; excellent flow characteristics
- Easy to connect
- Cost-effective alternative to ClearFLEX for applications that don't require regulatory compliances
- Light weight, yet tough and abrasion-resistant

Recommended Applications:

- General-purpose chemical transfer and other applications not subject to regulatory requirements
- Suitable for use with foods and beverages
- Handles broad range of chemicals, gases and liquids

FLEX™ GP70B PVC Tubing – Black

Features and Benefits:

- More resistant to UV exposure than clear tubing
- Does not promote algae growth

Recommended Applications:

- Outdoor applications
- Light-sensitive media
- Color coding of processing lines
- Secondary containment of other lines

FLEX GP70 (Clear) Cat. No.	FLEX GP70B (Black) Cat. No.	Size, in.			Oper. Pressure, psig @ 73°F	Case Qty., ft.
		ID	x OD	x Wall		
8200-4170		1/16	1/8	1/32	66	100
8200-4240		1/8	3/16	1/32	46	100
8200-4245	8242-4245	1/8	1/4	1/16	68	100
8200-4290		3/16	1/4	1/32	34	100
8200-4295	8242-4295	3/16	5/16	1/16	54	100
8200-4300		3/16	3/8	3/32	70	100
8200-4305		3/16	7/16	1/8	80	100
8200-4330		1/4	5/16	1/32	28	100
8200-4335	8242-4335	1/4	3/8	1/16	46	100
8200-4340		1/4	7/16	3/32	58	100
8200-4345	8242-4345	1/4	1/2	1/8	70	100
8200-4390	8242-4390	5/16	7/16	1/16	40	100
8200-4395		5/16	1/2	3/32	52	100
8200-4400		5/16	9/16	1/8	62	100
8200-4430	8242-4430	3/8	1/2	1/16	34	100
8200-4435		3/8	9/16	3/32	48	100
8200-4440	8242-4440	3/8	5/8	1/8	58	100
8200-4463		7/16	9/16	1/16	30	100
8200-4465		7/16	5/8	3/32	44	100
8200-4470		7/16	11/16	1/8	48	100
8200-4505	8242-4505	1/2	5/8	1/16	28	100
8200-4510		1/2	11/16	3/32	38	100
8200-4515	8242-4515	1/2	3/4	1/8	44	100
8200-4540		9/16	3/4	3/32	36	100
8200-4560		5/8	3/4	1/16	24	100
8200-4565		5/8	13/16	3/32	34	100
8200-4570	8242-4570	5/8	7/8	1/8	38	100
8200-2590		11/16	15/16	1/8	36	50
8200-2600		3/4	7/8	1/16	20	50
8200-2605	8242-2605	3/4	1	1/8	34	50
8200-4605		3/4	1	1/8	34	100
8200-2615		3/4	1-1/8	3/16	48	50
8200-2640		7/8	1-1/8	1/8	30	50
8200-2675	8242-2675	1	1-1/4	1/8	28	50
8200-4675		1	1-1/4	1/8	28	100
8200-2685		1	1-3/8	3/16	38	50
8200-2690		1	1-1/2	1/4	44	50
8200-2710		1-1/4	1-1/2	1/8	24	50
8200-2715		1-1/4	1-5/8	3/16	34	50
8200-2720		1-1/4	1-3/4	1/4	40	50
8200-2745		1-1/2	1-3/4	1/8	18	50
8200-2750		1-1/2	1-7/8	3/16	28	50
8200-2755	8242-2755	1-1/2	2	1/4	36	50
8200-2790	8242-2790	2	2-1/2	1/4	28	50
8200-2805		2-1/4	2-3/4	1/4	24	50
8200-2815	8242-2815	2-1/2	3	1/4	22	50
8200-2840	8242-2840	3	3-1/2	1/4	20	50

NOTE:

The operating pressures for FLEX™ Tubing Products decrease as the temperature increases. The operating pressure for any given formulation and size at 125°F (52°C) is half that at 73°F (23°C).



Ether-PUR FLEX™ 84 Tubing – Ether-Based

Features and Benefits:

- Complies with FDA CFR 21 for food packaging
- Clear and flexible
- Tough; resists tearing and abrasion
- Superior resistance to hydrolytic degradation compared to Ester-PUR FLEX 85
- Flexible at low temperatures
- High impact resistance
- Pure polyurethane; contains no plasticizers and low levels of extractables
- Resistant to atmospheric ozone

Recommended Applications:

- High-purity applications
- Instrumentation
- Distilled, deionized, demineralized or reverse osmosis-treated water
- Handling petroleum-based products
- **Recommended for use with aqueous solutions**

Ether-PUR FLEX 84 Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8684-4170	1/16		1/8	1/32	90	100
8684-4240	1/8		3/16	1/32	58	100
8684-4245	1/8		1/4	1/16	92	100
8684-4290	3/16		1/4	1/32	48	100
8684-4295	3/16		5/16	1/16	72	100
8684-4330	1/4		5/16	1/32	42	100
8684-4335	1/4		3/8	1/16	64	100
8684-4340	1/4		7/16	3/32	80	100
8684-4345	1/4		1/2	1/8	92	100
8684-4390	5/16		7/16	1/16	56	100
8684-4400	5/16		9/16	1/8	84	100
8684-4430	3/8		1/2	1/16	48	100
8684-4435	3/8		9/16	3/32	64	100
8684-4440	3/8		5/8	1/8	76	100
8684-4465	7/16		5/8	3/32	56	100
8684-4505	1/2		5/8	1/16	34	100
8684-4515	1/2		3/4	1/8	64	100
8684-4565	5/8		13/16	3/32	44	100
8684-4570	5/8		7/8	1/8	50	100
8684-2605	3/4		1	1/8	48	50
8684-2640	7/8		1-1/8	1/8	38	50
8684-2675	1		1-1/4	1/8	34	50

Ester-PUR FLEX™ 85 Tubing – Ester-Based

Features and Benefits:

- Complies with FDA CFR 21 for food packaging
- Excellent resistance to abrasion, low temperatures and flexing
- Resistant to atmospheric ozone, aliphatic hydrocarbons and petroleum products
- Pure polyurethane; contains no plasticizers and low levels of extractables

Recommended Applications:

- High-purity applications
- Fuel lines
- Instrumentation
- Cable jacketing
- Gas sampling lines
- **NOT recommended for use with aqueous solutions**

Ester-PUR FLEX 85 Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8685-4170	1/16		1/8	1/32	106	100
8685-4240	1/8		3/16	1/32	70	100
8685-4245	1/8		1/4	1/16	110	100
8685-4290	3/16		1/4	1/32	56	100
8685-4295	3/16		5/16	1/16	86	100
8685-4330	1/4		5/16	1/32	50	100
8685-4335	1/4		3/8	1/16	76	100
8685-4340	1/4		7/16	3/32	96	100
8685-4345	1/4		1/2	1/8	110	100
8685-4390	5/16		7/16	1/16	66	100
8685-4400	5/16		9/16	1/8	100	100
8685-4430	3/8		1/2	1/16	56	100
8685-4435	3/8		9/16	3/32	76	100
8685-4440	3/8		5/8	1/8	90	100
8685-4465	7/16		5/8	3/32	66	100
8685-4505	1/2		5/8	1/16	40	100
8685-4515	1/2		3/4	1/8	76	100
8685-4565	5/8		13/16	3/32	52	100
8685-4570	5/8		7/8	1/8	60	100
8685-2605	3/4		1	1/8	56	50
8685-2640	7/8		1-1/8	1/8	46	50
8685-2675	1		1-1/4	1/8	40	50



PolyFLEX™ 50 LDPE Tubing – Natural

Features and Benefits:

- Complies with FDA CFR 21 for food packaging
- Semi-rigid and translucent
- Low in extractables
- Offers a wide range of working temperatures
- Resistant to a broad range of chemicals

Recommended Applications:

- Transfer of foods and beverages
- Instrumentation
- Chemical lines

PolyFLEX™ 50B LDPE Tubing – Black

Features and Benefits:

- Same formulation as PolyFLEX 50
- Complies with FDA CFR 21 for food packaging
- More resistant to UV radiation than natural tubing
- Does not promote algae growth

Recommended Applications:

- Outdoor applications
- Light-sensitive media
- Color coding of processing lines

PolyFLEX 50 Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8750-4245	1/8		1/4	1/16	200	100
8750-4281	.170		1/4	.040	120	100
8750-4335	1/4		3/8	1/16	120	100
8750-4430	3/8		1/2	1/16	86	100
8750-4505	1/2		5/8	1/16	66	100
8750-2605	3/4		1	1/8	80	50

PolyFLEX 50B Cat. No.	Size, in.				Oper. Pressure, psig @ 73°F	Case Qty., ft.
	ID	x	OD	x Wall		
8752-4245	1/8		1/4	1/16	200	100
8752-4281	.170		1/4	.040	120	100
8752-4335	1/4		3/8	1/16	120	100
8752-4430	3/8		1/2	1/16	86	100
8752-4505	1/2		5/8	1/16	66	100

NOTE:

The operating pressures for FLEX™ Tubing Products decrease as the temperature increases. The operating pressure for any given formulation and size at 125°F (52°C) is half that at 73°F (23°C).

Chemical Resistance Chart

First letter of each pair applies to conditions at 73°F (23°C); second letter to conditions at 125°F (52°C).

Tubing material	PVC	PVC Fuel	PUR Ester	PUR Ether	LDPE
Chemical	ClearFLEX 60/M60/V60/70 GP70/GP70B BraidFLEX 70N	FuelFLEX 65	Ester-PUR FLEX 85	Ether-PUR FLEX 84	PolyFLEX 50/50B
Acetaldehyde	NN	NN	—	—	GN
Acetamide, Sat.	NN	NN	NN	NN	EE
Acetic Acid, 5%	EG	EG	EG	GF	EE
Acetic Acid, 50%	FN	FN	FN	NN	EE
Acetic Anhydride	NN	NN	NN	NN	NN
Acetone	NN	NN	NN	NN	GG
Acetonitrile	NN	NN	NN	NN	EE
Acrylonitrile	NN	NN	—	—	EE
Adipic Acid	EF	EF	GF	FF	EG
Alanine	NN	NN	NN	—	EE
Allyl Alcohol	GN	GN	F-	F-	EE
Aluminum Hydroxide	EG	EG	G-	G-	EG
Aluminum Salts	EG	EG	EG	EG	EE
Amino Acids	EF	EF	—	—	EE
Ammonia	GF	GF	—	—	EE
Ammonium Acetate, Sat.	EG	EG	NN	NN	EE
Ammonium Glycolate	GF	GF	—	—	EG
Ammonium Hydroxide, 5%	EG	EG	EG	EG	EE
Ammonium Hydroxide, 30%	GF	GF	EF	EF	EG
Ammonium Oxalate	GF	GF	—	—	EG
Ammonium Salts	EG	EG	GF	EG	EE
n-Amyl Acetate	NN	NN	NN	NN	GF
Amyl Chloride	NN	NN	—	—	NN
Aniline	NN	NN	NN	NN	EG
Aqua Regia	NN	NN	NN	NN	NN
Benzaldehyde	NN	NN	NN	NN	EG
Benzene	NN	NN	NN	NN	FN
Benzoic Acid, Sat.	EG	EG	NN	NN	EE
Benzyl Acetate	NN	NN	NN	NN	EG
Benzyl Alcohol	FN	FN	NN	NN	NN
Bromine	NN	NN	NN	NN	NN
Bromobenzene	NN	NN	NN	NN	NN
Bromoform	NN	NN	NN	NN	NN
Butadiene	NN	NN	—	—	NN
Butyl Chloride	NN	NN	NN	NN	NN
n-Butyl Acetate	NN	NN	NN	NN	GF
n-Butyl Alcohol	FN	FN	FF	NN	EE
sec-Butyl Alcohol	FN	FN	FF	NN	EG
tert-Butyl Alcohol	FN	FN	FF	NN	EG
Butyric Acid	NN	NN	GF	FF	NN
Calcium Hydroxide, Conc.	EG	EG	EG	EG	EE
Calcium Hypochlorite, Sat.	FN	FN	NN	GF	EE
Carbazole	NN	NN	NN	NN	EE
Carbon Disulfide	NN	NN	FF	NN	NN
Carbon Tetrachloride	NN	NN	NN	NN	FN
Cedarwood Oil	NN	FN	GF	GF	NN
Cellosolve Acetate	NN	NN	NN	NN	EG
Chlorobenzene	NN	NN	NN	NN	NN
Chlorine, 10% in Air	EG	EG	NN	NN	GN
Chlorine, 10% (Moist)	FN	FN	NN	NN	GN
Chloroacetic Acid	NN	NN	NN	NN	EE
p-Chloroacetophenone	NN	NN	NN	NN	EE
Chloroform	NN	NN	NN	NN	FN
Chromic Acid, 10%	EN	EN	NN	NN	EE
Chromic Acid, 50%	GN	GN	NN	NN	EE
Cinnamom Oil	NN	NN	GF	GF	NN
Citric Acid, 10%	GF	GF	G-	G-	EE
Cresol	NN	NN	NN	NN	NN

Tubing material	PVC	PVC Fuel	PUR Ester	PUR Ether	LDPE
Chemical	ClearFLEX 60/M60/V60/70 GP70/GP70B BraidFLEX 70N	FuelFLEX 65	Ester-PUR FLEX 85	Ether-PUR FLEX 84	PolyFLEX 50/50B
Cyclohexane	NN	NN	E-	G-	FN
Cyclohexanone	NN	NN	NN	NN	NN
Cyclopentane	NN	NN	E-	G-	NN
Decalin	NN	NN	NN	NN	GF
n-decane	FN	GN	E-	E-	FN
Diacetone Alcohol	NN	NN	—	—	FN
o-Dichlorobenzene	NN	NN	NN	NN	FN
p-Dichlorobenzene	NN	NN	NN	NN	FN
1,2-Dichloroethane	NN	NN	NN	NN	NN
2,4-Dichlorophenol	NN	NN	NN	NN	NN
Diethyl Benzene	NN	NN	NN	NN	NN
Diethyl Ether	NN	NN	G-	F-	NN
Diethyl Ketone	NN	NN	NN	NN	GF
Diethyl Malonate	NN	NN	FN	NN	EE
Diethylamine	NN	NN	NN	NN	NN
Diethylene Glycol	FN	FN	GF	FF	EE
Diethylene Glycol Ethyl Ether	NN	NN	FN	FN	EE
Dimethyl Acetamide	NN	NN	NN	NN	FN
Dimethyl Formamide	NN	NN	NN	NN	EE
Dimethylsulfoxide	NN	NN	—	—	EE
1,4-Dioxane	FN	FN	NN	NN	GF
Dipropylene Glycol	FN	FN	GF	FF	EE
Ether	NN	NN	FN	NN	NN
Ethyl Acetate	NN	NN	NN	NN	EE
Ethyl Alcohol, 40%	GF	GF	FN	FN	EG
Ethyl Alcohol (Absolute)	FN	FN	NN	NN	EG
Ethyl Benzene	NN	NN	NN	NN	FN
Ethyl Benzoate	NN	NN	NN	NN	FF
Ethyl Butyrate	NN	NN	—	—	GN
Ethyl Chloride, Liquid	NN	NN	FN	FN	FN
Ethyl Cyanoacetate	NN	NN	—	—	EE
Ethyl Lactate	NN	NN	—	—	EE
Ethylene Chloride	NN	NN	NN	FN	GN
Ethylene Glycol	FN	GN	GF	GF	EE
Ethylene Glycol Methyl Ether	FN	FN	FN	FN	EE
Ethylene Oxide	GN	GN	NN	NN	FF
Fatty Acids	EG	EG	—	—	EG
Fluorides	GF	GF	—	—	EE
Fluorine	FN	FN	NN	NN	FN
Formaldehyde, 10%	GN	GN	—	—	EE
Formaldehyde, 40%	FN	FN	NN	NN	EG
Formic Acid, 3%	EG	GG	GF	NN	EG
Formic Acid, 50%	GF	GF	FN	NN	EG
Formic Acid, 98 - 100%	NN	NN	NN	NN	EG
Freon TF	NN	NN	E-	E-	EG
Fuel Oil	NN	GN	GF	FF	FN
Gasoline	NN	GN	GN	FN	FN
Glacial Acetic Acid	NN	NN	NN	NN	EG
Glutaraldehyde (Disinfectant)	FN	FN	—	—	EG
Glycerine	GF	EF	GF	GF	EE
n-Heptane	NN	FN	EG	GF	FN
Hexane	NN	FN	EG	GF	NN
Hydrazine	NN	NN	NN	NN	NN
Hydrochloric Acid, 1-5%	EF	EF	GF	GF	EE
Hydrochloric Acid, 20%	GF	GF	NN	NN	EE
Hydrochloric Acid, 35%	GN	GN	NN	NN	EE
Hydrofluoric Acid, 4%	GN	GN	GF	GF	EG
Hydrofluoric Acid, 48%	FN	FN	NN	NN	EE

Tubing material	PVC	PVC Fuel	PUR Ester	PUR Ether	LDPE
Chemical	ClearFLEX 60/M60/V60/70 GP70/GP70B BraidFLEX 70N	FueIFLEX 65	Ester-PUR FLEX 85	Ether-PUR FLEX 84	PolyFLEX 50/50B
Hydrogen Peroxide, 3%	EG	EG	EG	EG	EE
Hydrogen Peroxide, 30%	GN	GN	GG	GG	EG
Hydrogen Peroxide, 90%	NN	NN	—	—	EG
Iodine Crystals	NN	NN	NN	NN	NN
Isobutyl Alcohol	GN	GN	FF	FF	EE
Isopropyl Acetate	NN	NN	NN	NN	GF
Isopropyl Alcohol	GN	GN	GF	GF	EE
Isopropyl Benzene	NN	NN	NN	NN	FN
Isopropyl Ether	NN	NN	GF	FN	NN
Jet Fuel	NN	FN	—	—	FN
Kerosene	NN	GN	GF	FF	FN
Lacquer Thinner	NN	NN	FN	FN	NN
Lactic Acid, 3%	EG	EG	EG	EG	EG
Lactic Acid, 85%	GF	GF	GF	FF	EE
Mercury*	GN	GN	EG	EG	EE
2-Methoxyethanol	GN	GN	G-	G-	EG
Methoxyethyl Oleate	NN	NN	GF	FF	EG
Methyl Acetate	NN	NN	NN	NN	FN
Methyl Alcohol	FN	FN	FN	FN	EE
Methyl Ethyl Ketone	NN	NN	NN	NN	EG
Methyl Isobutyl Ketone	NN	NN	NN	NN	GF
Methyl Propyl Ketone	NN	NN	NN	NN	GF
Methyl-t-butyl Ether	NN	NN	—	—	NN
Methylene Chloride	NN	NN	NN	NN	FN
Mineral Oil (Petroleum)	NN	GN	EG	GF	GN
Mineral Spirits	NN	GN	GN	FN	FN
Nitric Acid, 1-10%	EF	EF	NN	FN	EE
Nitric Acid, 50%	GN	GN	NN	NN	GN
Nitric Acid, 70%	NN	NN	NN	NN	FN
Nitrobenzene	NN	NN	NN	NN	NN
Nitromethane	NN	NN	NN	NN	NN
n-Octane	NN	GN	EG	GF	EE
Orange Oil	NN	FN	GF	GF	FN
Ozone	GF	GF	G-	G-	EG
Perchloric Acid	NN	NN	NN	NN	GN
Perchloroethylene	NN	NN	NN	NN	NN
Phenol, Crystals	FN	FN	NN	NN	GN
Phenol, Liquid	FN	FN	NN	NN	NN
Phosphoric Acid, 1-5%	EG	EG	NN	NN	EE
Phosphoric Acid, 85%	GF	GF	NN	NN	EE
Picric Acid	NN	NN	FN	FN	NN
Pine Oil	NN	FN	FN	FN	GN
Potassium Hydroxide, 1%	EG	EG	E-	E-	EE
Potassium Hydroxide, conc.	GF	GF	G-	G-	EE
Propane Gas	FN	GN	GF	FF	NN

Tubing material	PVC	PVC Fuel	PUR Ester	PUR Ether	LDPE
Chemical	ClearFLEX 60/M60/V60/70 GP70/GP70B BraidFLEX 70N	FueIFLEX 65	Ester-PUR FLEX 85	Ether-PUR FLEX 84	PolyFLEX 50/50B
Propionic Acid	FN	FN	GF	FF	FN
Propylene Glycol	GN	GN	G-	G-	EE
Propylene Oxide	FN	FN	—	—	EG
Resorcinol, Sat.	NN	NN	NN	NN	EE
Resorcinol, 5%	NN	NN	NN	NN	EE
Salicylaldehyde	NN	NN	—	—	EG
Salicylic Acid, Powder	GF	GF	—	—	EE
Salicylic Acid, Sat.	GF	GF	—	—	EE
Salt Solutions, Metallic	EG	EG	G-	G-	EE
Silicone Oil	GF	GF	E-	G-	EG
Silver Acetate	GN	GN	—	—	EE
Silver Nitrate	EG	EG	E-	E-	EG
Skydrol LD4	NN	NN	NN	NN	GF
Sodium Acetate, Sat.	GN	GN	NN	NN	EE
Sodium Hydroxide, 1%	EG	EG	E-	E-	EE
Sodium Hydroxide, 50%-Sat.	GN	GN	G-	G-	GG
Sodium Hypochlorite, 15%	EG	EG	EG	NN	EE
Stearic Acid, Crystals	EG	EG	EF	EF	EE
Sulfuric Acid, 1-6%	EG	EG	GN	EF	EE
Sulfuric Acid, 20%	EF	EF	FN	EF	EE
Sulfuric Acid, 60%	FN	FN	NN	NN	EG
Sulfuric Acid, 98%	NN	NN	NN	NN	GG
Sulfur Dioxide, Liq., 46 psig	NN	NN	—	—	NN
Sulfur Dioxide, Wet or Dry	GN	GN	—	—	EE
Sulfur Salts	GN	GN	—	—	FN
Tartaric Acid	EG	FG	G-	G-	EE
Tetrahydrofuran	NN	NN	NN	NN	FN
Thionyl Chloride	NN	NN	—	—	NN
Toluene	NN	NN	FN	NN	FN
Tributyl Citrate	NN	NN	NN	NN	GF
Trichloroacetic Acid	FN	FN	NN	NN	FN
1,2,4-Trichlorobenzene	NN	NN	NN	NN	NN
Trichloroethane	NN	NN	NN	NN	NN
Trichloroethylene	NN	NN	NN	NN	NN
Triethylene Glycol	FN	FN	GF	FN	EG
2,2,4-Trimethylpentane	NN	FN	GF	FN	FN
Tripropylene Glycol	FN	FN	GF	FN	EE
Tris Buffer Solution	FN	FN	—	—	EG
Turpentine	FN	FN	GF	GF	FN
Undecyl Alcohol	GF	GF	EG	GF	EF
Urea	GN	GN	F-	F-	EE
Vinylidene Chloride	NN	NN	NN	NN	NN
Xylene	NN	NN	FN	NN	GN
Zinc Stearate	GF	GF	E-	G-	EE

* Mercury will permeate through all resins listed but only chemically attack those resins not listed as EE.

Chemical Resistance Classifications

- E** 30 days of constant exposure cause no damage. Plastic may even tolerate for years.
- G** Little or no damage after 30 days of constant exposure to the reagent.
- F** Some effect after 7 days of constant exposure. Depending on the plastic, the effect may be crazing, cracking, loss of strength or discoloration. Solvents may cause softening, swelling and/or permeation losses.
- N** Not recommended for continuous use. Immediate damage may occur. Depending on the plastic, the effect will be a more severe crazing, cracking, loss of strength, discoloration, deformation, dissolution or permeation loss.
- Not tested. Finger Lakes Extrusion recommends that you test under your own conditions.

NOTE: The chemical resistance information in this chart is a general guide only. Because many factors can affect chemical resistance, you should test under your own conditions. If any doubt exists about specific applications, contact us for additional information.

Chemical Usage Guide

	ClearFLEX 60	ClearFLEX 70	FuelFLEX 65	BraidFLEX 70N	FLEX GP70	Ether-PUR FLEX 84	Ester-PUR FLEX 85	PolyFLEX 50
Material	PVC	PVC	PVC Fuel	PVC Reinf.	PVC	PUR Ether	PUR Ester	LDPE
Acids – Weak	E	E	E	E	E	F	F	E
Acids – Strong	F	F	F	F	F	N	N	E
Alcohols – Aliphatic	G	G	E	G	G	F	F	E
Aldehydes	N	N	N	N	N	F	F	G
Bases – Weak	E	E	E	E	E	G	G	E
Bases – Strong	G	G	G	G	G	F	F	G
Esters	N	N	N	N	N	N	N	G
Hydrocarbons - Aliphatic	F	F	G	F	F	E	E	F
Hydrocarbons – Aromatic	N	N	N	N	N	N	N	F
Hydrocarbons – Halogenated	N	N	N	N	N	N	N	N
Ketones	N	N	N	N	N	N	N	G
Oxidizing Agents – Strong	F	F	F	F	F	N	N	F

NOTE: The chemical resistance information in this chart is a general guide only. Because many factors can affect chemical resistance, you should test under your own conditions. If any doubt exists about specific applications, contact us for more information.

Tolerances

	ClearFLEX 60	ClearFLEX 70	FuelFLEX 65	BraidFLEX 70N	FLEX GP70	Ether-PUR FLEX 84	Ester-PUR FLEX 85	PolyFLEX 50
Inside Dia., +/- inches	PVC	PVC	PVC Fuel	PVC Reinf.	PVC	PUR Ether	PUR Ester	LDPE
1/16 and under 1/8	.003	.003	.005	—	.007	.005	.005	.007
1/8 and under 5/16	.005	.005	.008	.010	.010	.009	.009	.007
5/16 and under 1/2	.008	.008	.010	.012	.015	.012	.012	.007
1/2 and under 3/4	.010	.010	.015	.015	.020	.018	.018	.010
3/4 and under 1-1/8	.015	.015	.020	.015	.030	.025	.025	.015
1-1/8 and under 1-3/4	.020	.020	—	.020	.040	.035	.035	—
1-3/4 and under 2-1/2	.031	.031	—	.031	.055	—	—	—
2-1/2 and under 3	—	—	—	—	.065	—	—	—
3 and under 4	—	—	—	—	.080	—	—	—
Wall Thickness, +/- inches								
0 to under 1/16	.003	.003	.004	—	.005	.005	.005	.006
1/16 to under 1/8	.003	.003	.005	—	.006	.006	.006	.008
1/8 to under 1/4	.005	.005	.010	—	.020	.009	.009	—
1/4 to under 3/8	.010	.010	.015	—	.030	—	—	—
3/8 to 1/2	.015	.015	.025	—	.040	—	—	—

