



# Food & Beverage Transfer

Hose • Tubing • Fittings



# Hose, Tubing & Fitting Solutions

Streamline food and beverage applications

## Hose & Tubing

From the field to the shelf, Parker Hannifin is helping the world put food on the table. Parflex hose and tubing products keep seeders, tractors and harvest equipment running as well as, keeping production and assembly lines moving in food and beverage processing facilities.



Handling the extreme is what our engineers focus on every day. The products in this brochure operate in very high temperatures and inhibit contamination without compromising the integrity of the product. Many of the hoses offered are lined with a PTFE core and PAGE Flare-Seal hoses have the PTFE flared

through the fitting to eliminate bacteria entrapment. PTFE is also non-leaching and very easy to clean.

Specialty hoses and tubing, designed for extreme flexibility, allow product to move through confined spaces without kinking or interrupting flow. Other hoses are designed to handle steam or vibration, without increasing fatigue. Special sanitary fittings lined with FEP eliminate heat build up and promote increased flow and easy cleaning.



Parker engineers continually review products and work to increase operator safety by making hoses lighter and easier to handle. Compared to rubber, a Parflex hose is considerably lighter, up to 70%. Jackets and fire sleeves keep hoses cool to the touch and tubing is transparent so operators can view the media moving through the tubing.

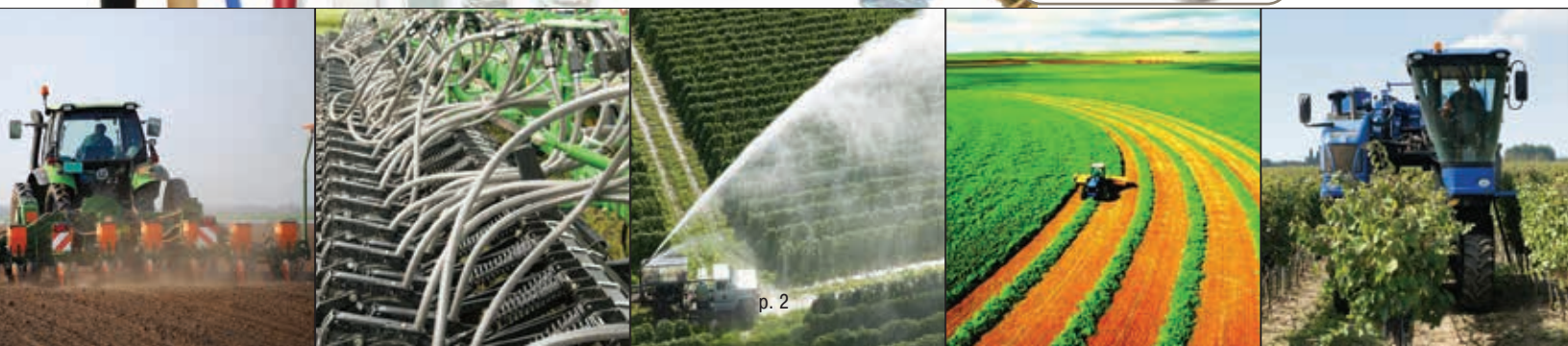
## Tube Fittings

Parflex tubing products utilize the fitting solutions provided by the Fluid System Connectors Division. Their technically superior push-to-connect fittings, valves, cartridges, tubing, and accessories are designed to engineer your success, offering you new ways to create value. Our partnership approach allows us to work together to create the solutions you need to operate more efficiently and effectively.

## Hose - Tubing - Fittings Specifications

Products meet the following:

- FDA 21 CFR 177.1550, 177.2600
- NSF-51
- NSF-61
- RoHS



# Hose

Food, Beverages, Hot Oils, Transfer Lines, Dispensers

## "Smoothbore" Hose

### 919

Chemical transfer lines, hot oils, adhesive dispensing, and/or compressed air and gases. 625-3000 psi. -100°F to 450°F. Sizes 3/16" - 1-1/8" I.D. dependent on type. Compliant with FDA standards.

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### STW

For chemical transfer lines, hot oils, adhesive dispensing, and/or compressed air and gases. 900-3000 psi. -100°F to 450°F. Sizes 1/4" - 1-1/2" I.D. Compliant with FDA, USP Class VI, ISO 10993.

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### 919J/919U

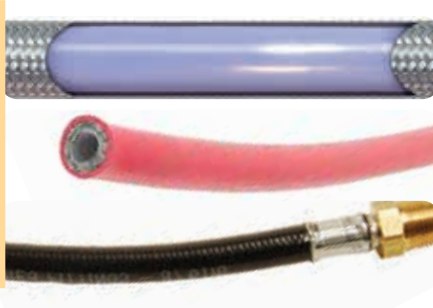
**919J** - Same applications as 919 with silicone jacket protection. 1200 - 3000 psi. -40°F to 450°F. Sizes 3/16" - 5/8" I.D. **919U** - Same applications as 919 with polyurethane jacket protection. 1000 - 3000 psi. -40°F to 275°F. Sizes 3/16" - 7/8" I.D.

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### 929

Tight bend radius. Increased wall thickness .040". General hydraulics, instrumentation lines, sampling/analyzing lines, etc. 1200 - 3000 psi. -100°F to 450°F. Sizes 3/16" - 7/8" I.D. Compliant with FDA standards.

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### Flare-Seal®

Continuous PTFE through fittings - no area for bacterial entrapment. Sizes 1/2" - 4" I.D. Compliant with FDA, USP Class VI, ISO 10993. **SCWV-FS** - 150-500 psi. -65°F to 325°F. Stainless Steel Braid. **PCWV-FS** 100-300 psi. 0°F to 212°F. Polypropylene Braid.

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### 540P

540P - Specialty water hose. Non leaching, low moisture permeability. 1250-2750 psi. -40°F to 150°F. Sizes 1/4" - 3/4" I.D. FDA compliant, polyethylene core tube. Polyurethane cover.

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## "Convuluted" Hose



### 939

Exceptional kink resistance. Transfer lines for nearly all chemicals. 250 - 1500 psi. -100°F to 450°F. Sizes 3/8" - 2" I.D. Compliant with FDA standards.

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### SCW

Transfer lines for nearly all food and beverages. Sizes 1/4" - 2" I.D. Compliant with FDA, USP Class VI, ISO 10993. 450 - 1500 psi. -100°F to 500°F. Stainless Steel Braid.

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### SCWV

Heavy Wall for extra flexibility. Transfer lines for nearly all food and beverages. Sizes 1/2" - 4" I.D. Compliant with FDA, USP Class VI, ISO 10993. SCWV 150 - 1500 psi. -100°F to 500°F. Stainless Steel Braid.

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# Tubing

## Fluoropolymer

## Food Grade Tubing

Parflex fluoropolymer tubing features a low coefficient of friction and anti-stick properties, high temperature capabilities and the most corrosion and chemical resistance of all polymers. Within normal use temperatures, fluoropolymers are attacked by so few chemicals that it is easier to describe the exceptions rather than list the chemicals they are compatible with. These chemically inert tubes are non-wetting and non-leaching, making them ideal for a wide range of fluid and material handling applications.

Fluoropolymer tubing is available in PTFE, FEP, PFA and PVDF with some materials operating at temperatures up to 500°F/260°C. Each material has specific dominant characteristics such as increased clarity, long lengths and increased mechanical strength.

### PTFE

*Offered in beading, smoothbore tubing, convoluted and heat shrinkable tubing. Features unmatched chemical resistance and a non-stick surface that facilitates flow and eliminates media buildup. Best flex life & lowest coefficient of friction. Sizes from .010" I.D. up to 2" O.D.*

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### FEP

*Offered in smoothbore tubing, convoluted, corrugated, retractable coils and heat shrink tubing. Features the best clarity and is a close second to PTFE in chemical resistance. Long, continuous lengths (1,000 feet and longer). Sizes from .010" I.D. up to 2" O.D.*

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### PFA

*Offered in smoothbore tubing, convoluted, corrugated, retractable coils and heat shrink tubing. When temperature and clarity are both factors, PFA is used. Handles high-temperatures like PTFE but has long continuous lengths, and almost as much clarity as FEP. Very good purity.*

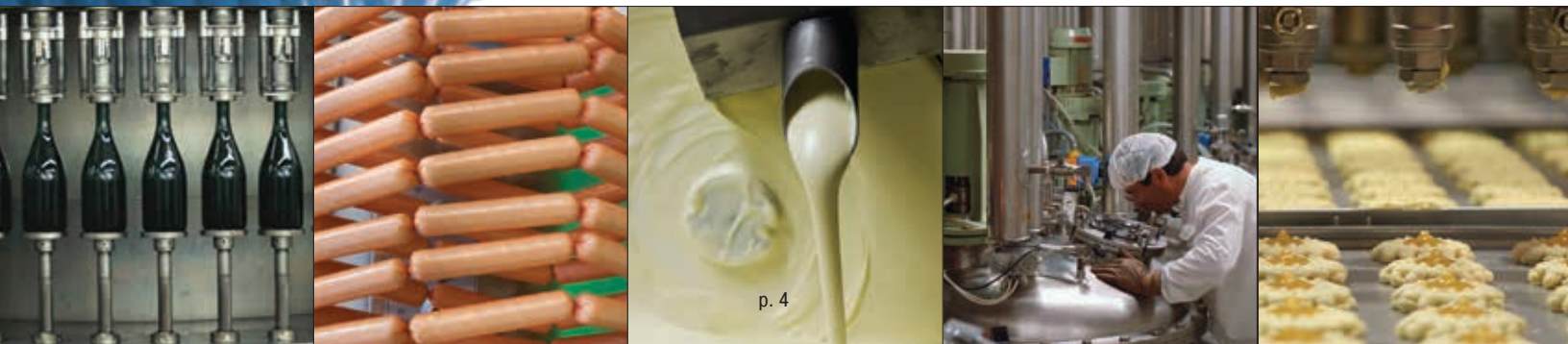
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### High Purity PFA

*Offered in smoothbore tubing, convoluted, corrugated, retractable coils and heat shrinkable tubing. Highest molecular weight. Best purity. Lowest level of extractables. Low permeation. Sizes from .010" I.D. up to 2" O.D.*

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Parflex PTFE, FEP and PFA tubing complies with European Standard RoHS and the tubing is also FDA compliant to FDA regulation 21 CFR 177.1550, making these products suitable for use in food and beverage applications.





# Tubing

## Thermoplastic

### Polyethylene

- Parflex polyethylene tubing meets FDA, NSF Standard 51 for food contact applications and NSF-61 for potable water applications.
- E-Series tubing is made of 100% virgin resin material.
- Polyethylene tubing meets ASTM D-1693 (10% IGEPAL) for stress crack resistance.
- Parflex also offers special PE tubing: PEFR (flame retardant) and HDPE (high density).

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### Polypropylene

- Polypropylene tubing meets FDA, NSF Standard 51 for food contact applications.
- Polypropylene tubing exhibits excellent chemical resistance to chlorinated water applications.
- Black Polypropylene tubing is commonly used in outdoor applications where UV light stabilization is required.

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### Polyvinyl Chloride (PVC)

- PVC tubing is made from 100% virgin resin material and meets FDA specifications for materials in contact with food and drugs.
- PVC tubing is a very flexible, 70 durometer tubing. It is crystal-clear and ideal for situations where visible fluid flow is necessary (i.e. sight gauges for tank identification).

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### Polyethylene Tubing

*Series E, Instrument Grade; Series EB, Ultraviolet Light Resistant - Chemically resistant, flexible, high-dimensional stability and long-term strength. Working pressure up to 145 psi. -80°F to 150°F. Sizes 1/4" - 5/8" O.D.; 6mm-12mm. FDA compliant. NSF-51 & NSF-61 listed. Assorted colors.*

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### Polypropylene Tubing

*Series PP, Laboratory Grade-FDA, NSF Listed; Flexible tubing for high temperatures and pressures. Excellent resistance to hot water and stress cracking. Working pressure up to 350 psi. 0°F to 200°F. Sizes 1/8" - 5/8" O.D. White PP Series meets FDA and NSF-51 specifications. Black and white.*

### Clear Vinyl Tubing

*Series PV - PVC tubing with exceptional purity, clarity and flexibility. Ideal for use in contact with food and drugs for human consumption. Working pressure up to 75 psi. Sizes 1/8" - 2-1/2" O.D. -40°F to 150°F. FDA Compliant. Clear.*



# Fittings

Prestolok® Metal Fittings for Pneumatic Automation Applications in Food Processing.

Silicone Free push-to-connect fitting with FKM seal offering excellent resistance to aggressive wash-down environments. The smooth surface design reduces retention zones for safe and easy cleaning.

Available in NPT, BSPT, BSPP and Metric threads.



**FOOD PROCESSING**

**Meeting Stringent Sanitary and Aseptic Standards**

Complete offering of metal flow controls and function fittings



## Tubeing Compatibility

Product Line	Parflex Tubing												
	Industrial Thermoplastic								Fluoropolymer				
	Polyethylene E & EB	Polyethylene PEFR	Polyethylene HDPE	Nylon N	Nylon PAT	Nylon NR	Polypropylene PP & PPB	Polyurethane 95U (90-95 Shore A)	Polyurethane 95FR (Weld Tubing)	Clear Vinyl	PFA Fluoropolymer	FEP Fluoropolymer	PTFE Fluoropolymer
PLM													
PLS													
LIQUIfit™													
TrueSeal™						MG		TS	TS	TS			

**Compatible**

**MG** Metal Gripper Collet

**TS** Tube Support Recommended

# Fittings

## Thermoplastic Fittings and Valves Potable Water and Beverage Dispensing

TrueSeal™ push-to-connect fittings available in Acetal, Polypropylene and Kynar® materials are ideal for water treatment and harsh chemical environments. TrueSeal™ has a metal gripper collet with EPDM seals to meet NSF requirements.

**WATER AND BEVERAGE**

**Keeping it Clean  
Keeping it Safe**

LIQUIfit™ has a stainless steel grab ring with EPDM seals and is manufactured from bio-base polymers suitable for contact with water, beverages and food.

Polypropylene Ball Valves and check valves are available in a variety of sizes and configurations to help isolate and control the systems.

### Temperature/Pressure

Product Line	Temperature	Tube Sizes/PSI													
		1/8"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	4mm	6mm	8mm	10mm	12mm	14mm	16mm
PLM	-4° to +250°F		290		290		290	290	290	290	290	290	290	290	
PLS	-4° to +245°F		290	290	290	290	290	290	290	290	290	290	290		
LIQUIfit™	35° to +200°F				230	230	190	160	230	230	230	190	160		
TrueSeal™ Acetal	-20° to +180°F				300	300	300	250							
TrueSeal™ Polypropylene	0° to +225°F				150	150	150	150							
TrueSeal™ Kynar	0° to +275°F				300		300								
Polypropylene Ball Valves	35° to +200°F				150	150	150	150							



TrueSeal™ Acetal

[Visit the webpage](#)



LIQUIfit™ Check Valve

TrueSeal™ Kynar®

[Visit the webpage](#)



Kynar Check Valve

LIQUIfit

[Visit the webpage](#)



Polypropylene Ball Valve



LIQUIfit™ Ball Valve





# Tubing Properties

## Quick Reference

### Fluoropolymers

#### PTFE (Polytetrafluoroethylene)

Working Temperature: 500°F (260°C)

Color: Opaque to translucent

- Chemically inert
- Lowest coefficient of friction
- Superior dielectric strength
- Exceptional heat resistance
- Self extinguishing
- Non-wetting
- Excellent flex life
- Laser markable

#### PFA (Perfluoroalkoxy)

Working Temperature: 500°F (260°C)

Color: Clear with light blue or tint

- High purity resins available
- Low permeation resins available
- Use when you need the temperature range of PTFE and the clarity of FEP
- Exceptional heat resistance
- Self extinguishing
- Non-wetting
- Good flex life

#### FEP (Fluorinated Ethylene Propylene)

Working Temperature: 400°F (204°C)

Color: Clear

- Excellent chemical resistance
- Non-wetting
- Weldable
- Tubes can be sealed by melting
- Long continuous lengths
- Low refractive index
- Improved clarity over PFA
- Lower cost alternative to PFA

### Thermoplastics

#### PP (Polypropylene)

Working Temperature: 200°F (93°C)

Color: White or Black

- Acid and chemically resistant
- Excellent compatibility with high temperature water
- Low water absorption (less than .01%)
- Good compatibility with vegetable oils
- Excellent resistance to environmental stress cracking

#### PE (Polyethylene)

Working Temperature: 150°F (65°C)

Color: Wide range of colors

- 100% virgin resin
- Flexible
- Chemical resistant
- High molecular weight resin provides increased dimensional stability, uniformity and long-term strength

#### PV (Vinyl)

Working Temperature: 150°F (65°C)

Color: Clear

- Made from a virgin clear PVC (polyvinyl chloride) resin; specifically formulated for exceptional purity, clarity and flexibility
- 70 durometer for soft, easy handling and bending without tubing collapse

**For chemical compatibility of thermoplastic tubing, please consult Parflex Catalog 4660, available online at [www.parker.com/pfd](http://www.parker.com/pfd)**

# Fluoropolymer Material Overview

## General Property Comparisons of Fluoropolymer Tubing

Properties	ASTM or Unit	PTFE	FEP	PFA	High Purity PFA
<b>MECHANICAL PROPERTIES</b>					
Specific Gravity	D792 D3307	2.13-2.22 -	2.12-2.17 -	2.12-2.17 -	- 2.14-2.16
Elongation %	D638 D3307	200-450 -	250-330 -	280-400 -	- 370
Tensile Strength (psi)	D638(psi) D3307(psi)	2000-7000 -	2800-4000 -	4000-5000 -	- 4693
Flexural Strength (psi)	D790	no break	no break	no break	no break
Compressive Strength (psi)	D695	700-900	725-2200	725-810	na
Tensile Elastic Modulus (Young's Modulus) (psi)	D638	57,000	50,000	72,500-87,000	na
Flexural Modulus	D790(psi) D790 103MPa (103kgf/cm <sup>2</sup> )	71,000-85,000 0.5-0.6 (5.0-6.0)	78,000-92,000 0.5-0.6 (5.5-6.4)	94,000-99,000 0.6-0.7 (6.6-7.0)	- 647-686 -
Flex Life (MIT cycles)	D2176	>1,000,000	5,000-80,000	10,000-500,000	2000 x 103
Hardness Durometer Shore D	D2240	D50-65	D55	D55-D60	D60
Coefficient of Friction	(on steel)	0.02	0.05	0.04-0.06	0.05
Abrasion Resistance 1000 cycles	Taber	8-90	14-20	0.00-96.75	na
Impact Strength IZO.D. 73°F/23°C notched ft/lbs/in	D256	3	no break	no break	no break
<b>THERMAL PROPERTIES</b>					
Melting Point	°C °F	327 621	260 500	305 582	305 582
Upper Service Temperature (20000h)	°C °F	260 500	204 400	260 500	260 500
Flammability	UL 94	V-0	V-0	V-0	V-0
Thermal Conductivity BTU	BTU-in/hr-ft <sup>2</sup> , °F	1.7-2.08	1.4	1.3	na
Thermal Conductivity Cal	Cal-cm/sec-cm <sup>2</sup> , °C	6 x 10 <sup>-4</sup>	6 x 10 <sup>-4</sup>	6 x 10 <sup>-6</sup>	na
Linear Coefficient of Thermal Expansion Min/in°F 73.4-140°F	D696	55.6	46.1-58.3	66.7	na
Heat of Fusion	BTU/LB	29-37	4-35	13	na
Heat of Combustion	BTU/LB °F	2200	2200	2300	na
Low Temperature Embrittlement	°C °F	-268 -450	-268 -450	-268 -450	-268 -450
<b>ELECTRICAL PROPERTIES</b>					
Dielectric Constant	D150/10 <sup>3</sup> Hz D150/10 <sup>6</sup> Hz	2.1 2.1	2.1 2.1	2.1 2.1	2.1 2.1
Dielectric Strength	D149/125 MIL D149/10 MIL	500 >1400	508 >610	500 >1400	500 - 600 na
Volume Resistivity	D257/ohm-cm	>10 <sup>18</sup>	>10 <sup>18</sup>	>10 <sup>18</sup>	na
Surface Resistivity	D257/ohm-cm	>10 <sup>18</sup>	>10 <sup>17</sup>	>10 <sup>17</sup>	na
<b>GENERAL PROPERTIES</b>					
Chemical/Solvent Resistance	D543	Excellent	Excellent	Excellent	Excellent
Refractive Index		1.35	1.338	1.34	1.34
Limiting Oxygen Index, %	D2868	>95	>95	>95	na
Water Contact Angle	Angle to Level	110	114	115	na
Water Absorption 24h, %	D570	<0.01	<0.01	<0.03	<0.01
Weatherability		Excellent	Excellent	Excellent	Excellent

### Summary

Within normal use temperatures, Fluoropolymers are attacked by so few chemicals that it is easier to describe the exceptions rather than list the chemicals with which Fluoropolymers are compatible.

# Compliance and Safety

GOVERNMENT & AGENCY COMPLIANCE	
Agency and Specifications	Approved Parflex Products
<b>Dry Food Contact:</b>	
FDA, CFR21 Part 177	E, PP, PV, 540P, 919, 919J, 919U, 929, 939, STW, SCW, PCW, SCWV, PCWV, SCWV, PCWV-FS, SCWV-FS
<b>Fluoropolymer Hose</b>	
Smoothbore PTFE Hose	919
	919J
	919U
	929
	STW
Convolute PTFE Hose	939
	PCW
	SCW
	SCWV
	PCWV
Flare-Seal PTFE Hoses	PCWV-FS
	SCWV-FS
<b>Thermoplastic Hose</b>	
Specialty Water	540P
<b>Fluoropolymer Tubing</b>	
PTFE Tubing	Series 101, 201
FEP Tubing	Series 103, 203
PFA Tubing	Series 104, 204
<b>Thermoplastic Tubing</b>	
Polypropylene Tubing	Series PP
Vinyl Tubing	Series PV
Potable Water, Liquid Foods:	
NSF Standard 51*	E and PP Series Tubing
NSF Standard 61*	E Series Tubing
*Indicates that products shown have been tested and certified by NSF International to the requirements of NSF Standards 51 and 61. NSF does not express or imply an approval on any product.	

**⚠ Parker Safety Guide for Selecting and Using Hose, Tubing, Fittings and Related Accessories  
Publication No. 4400-B.1  
Revised: October 2015, Rev A**

**WARNING:**

Failure or improper selection or improper use of hose, tubing, fittings, assemblies, valves, connectors, conductors or related accessories (“Products”) can cause death, personal injury and property damage. Possible consequences of failure or improper selection or improper use of these Products include but are not limited to:

- Fittings thrown off at high speed.
- High velocity fluid discharge.
- Explosion or burning of the conveyed fluid.
- Electrocution from high voltage electric power-lines.
- Contact with suddenly moving or falling objects that are controlled by the conveyed fluid.
- Injections by high-pressure fluid discharge.
- Dangerously whipping Hose.
- Tube or pipe burst.
- Weld joint fracture.
- Contact with conveyed fluids that may be hot, cold, toxic or otherwise injurious.
- Sparking or explosion caused by static electricity buildup or other sources of electricity.
- Sparking or explosion while spraying paint or flammable liquids.
- Injuries resulting from inhalation, ingestion or exposure to fluids.

Before selecting or using any of these Products, it is important that you read and follow the instructions below. No product from any division in Parker Fluid Connectors Group is approved for in-flight aerospace applications. For hoses and fittings used in in-flight aerospace applications, please contact Parker Aerospace Group.

Products in this brochure are not a complete representation of our product line, but are the most widely used products for food and beverage applications. Please contact the division to determine the suitability of other products for these or related applications.

**⚠ DO NOT USE FLUOROPOLYMERS WITH THE FOLLOWING:**

- Alkali metals such as elemental sodium, potassium, lithium, etc. The alkali metals remove fluorine from the polymer molecule.
- Extremely potent oxidizers, fluorine (F2) and related compounds (e.g., chlorine trifluoride, ClF3). These can be handled by fluoropolymers, but only with great care, as fluorine is absorbed into the resins, and the mixture becomes sensitive to a source of ignition such as impact.
- 80% NaOH (Sodium Hydroxide) or KOH (Potassium Hydroxide), metal hydrides such as Boranes (e.g., B2H6), Aluminum Chloride, Ammonia (NH3), certain Amines (R-NH2) and imines (R=NH) and 70% Nitric Acid at temperatures near the suggested service limit.

# Parker Fluid Connectors Group

## North American Divisions & Distribution Service Centers

**Your complete source** for quality tube fittings, hose & hose fittings, brass & composite fittings, quick-disconnect couplings, valves and assembly tools, locally available from a worldwide network of authorized distributors.

### **Fittings:**

Available in inch and metric sizes covering SAE, BSP, DIN, GAZ, JIS and ISO thread configurations, manufactured from steel, stainless steel, brass, aluminum, nylon and thermoplastic.

### **Hose, Tubing and Bundles:**

Available in a wide variety of sizes and materials including rubber, wire-reinforced, thermoplastic, hybrid and custom compounds.

### **Worldwide Availability:**

Parker operates Fluid Connectors manufacturing locations and sales offices throughout North America, South America, Europe and Asia-Pacific.

**For information,** call toll free...

**1-800-C-PARKER  
(1-800-272-7537)**

### **North American Divisions**

#### **Fluid System Connectors Division**

Otsego, MI  
phone 269 694 9411  
fax 269 694 4614

#### **Hose Products Division**

Wickliffe, OH  
phone 440 943 5700  
fax 440 943 3129

#### **Industrial Hose Division**

Wickliffe, OH  
phone 440 833 2120  
fax 440 833 2230

#### **Parflex Division**

Ravenna, OH  
phone 330 296 2871  
fax 330 296 8433

#### **Quick Coupling Division**

Minneapolis, MN  
phone 763 544 7781  
fax 763 544 3418

#### **Tube Fittings Division**

Columbus, OH  
phone 614 279 7070  
fax 614 279 7685

### **Distribution Service Centers**

#### **Buena Park, CA**

phone 714 522 8840  
fax 714 994 1183

#### **Conyers, GA**

phone 770 929 0330  
fax 770 929 0230

#### **Louisville, KY**

phone 502 937 1322  
fax 502 937 4180

#### **Portland, OR**

phone 503 283 1020  
fax 503 283 2201

#### **Toledo, OH**

phone 419 878 7000  
fax 419 878 7001  
fax 419 878 7420  
(FCG Kit Operations)

#### **Canada**

##### **Grimsby, ONT**

phone 905 945 2274  
fax 905 945 3945  
(Contact Grimsby for other Service Center locations.)



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