

## CHEM-FEED<sup>®</sup> CFS

Single pump and dual pump systems

Strong, lightweight polyester powder coated welded aluminum structure

Efficient, small footprint design

Flow indicator

Drip containment tray

Stainless Steel mounting pads

Can be shipped via UPS

Comes equipped with a pressure relief valve and check valve



Sold and serviced exclusively by highly skilled, factory authorized technicians.

Dual pump model number CFS-2AA-XAAA  
Shown with Flex-Pro pumps sold separately

Complete the system by ordering any of the following ProSeries-M<sup>®</sup> metering pumps:

- Flex-Pro<sup>®</sup> M-2, M-3 or M-4 series Peristaltic Metering Pump with Integral Controller
- Chem-Pro<sup>®</sup> MD-3, MC-2 or MC-3 series Diaphragm Metering Pump with Integral Controller

### Applications:

- Chemical metering
- Chlorination
- Fluoridation
- Potassium Permanganate
- Alum
- Sodium Bisulfite / Bisulfate
- Hydrochloric Acid
- Polymers
- Caustics
- Flocculants

### Chem-Feed Skid System Features:

Chem-Feed Engineered Skid Systems were designed and engineered using solid modeling tools for superior piping installation and easy component maintenance. Custom engineered universal mounting blocks and pre-machined mounting slots provide for easy component servicing and replacement. Lightweight for wall of floor mounting. Each factory built and tested system includes the following standard components:

**Pressure Relief Valve** - Protects the system from over-pressurization, 5-100 psi setting range, 150 psi maximum system pressure.

**Check Valve** - Protects the user from back-flow during pump maintenance.

**Flow Indicator** - Provides a visual indication of chemical movement through the system.

The following optional components are available for specification (see the ordering matrix):

**Inlet Y Strainer** - Recommended for Diaphragm Pump systems.

**Calibration Cylinder** - Confirm pump output under system conditions. Specify cylinder volumes from 1.6 GPH to 32 GPH.

**Pulsation Dampener** - Protect the system components from pulsation. Recommended for diaphragm pump systems.

**Pressure Gauge with Guard** - Isolate and protect the system pressure gauge. Specify pressure ranges from 0-30 psi, 0-100psi, or 0-200 psi.

**Chem-Sensor MS-6** - Provides 4-20mA and pulse output data to SCADA and to the pump to verify chemical movement through the system - see MS-6 data sheet for more details.

**Specifications:****Skid**

Chemically resistant polyester powder coated 6061 T6 aluminum. Welded joint construction.

**Pump** (sold separately)

Flex-Pro model M-2, M-3 or M-4 peristaltic pumps or Chem-Pro model MD-3, MC-2 or MC-3 diaphragm pumps. See page 6 for metering pump data.

**Piping**

PVC Schedule 80 (optional CPVC).

**Tubing (T)**

Reinforced braided PVC, 200 Psi max, meets NSF std. 51. The pump inlet and outlet flexible tubing connections are terminated to half unions and secured to the barbed fitting with stainless steel clamps. The calibration cylinder fill tube connections are secured to the barbed connectors with stainless steel clamps.

**Tubing clamps**

300 series SS band, 400 series SS screw

**Unions (U)**

PVC body, schedule 80, FKM seals (optional EPDM)

**Ball valves (V)**

Vented type ball, True unions, PVC body, PTFE shaft bearings and seats, FKM seals (optional EPDM)

**Pressure Relief Valve (PRV)**

PVC body, PTFE primary diaphragm seal. Non-wetted components: FKM secondary seal, zinc plated steel spring, stainless steel external hardware, HDPE pressure adjusting screw and locknut. Infinite adjustment from 5-100 psi. Maximum inlet pressure 150 psi.

**Calibration Cylinder (CC)**

PVC body, PVC end caps, 1/4" ID tubing outlet vent.  
Available volumes: 1.6 GPH (100ml), 4 GPH (250ml), 8 GPH (500ml), 16 GPH (1000ml), 32 GPH (2000ml).

**Pulsation Dampener (PD)**

CPVC body, 10 cubic inch volume, FKM bladder (optional EPDM bladder)

**Gauge w/guard (G)**

Gauge: liquid filled stainless steel with blowout plug, bottom mount, 1/4" NPT threads. Available pressure ranges: 0-30 psi, 0-100, psi, 0-200 psi.  
Guard: PVC body, FKM diaphragm seal, temperature compensated oil filled.

**Check Valve (CV)**

PVC body, FKM diaphragm (optional EPDM). Cracking pressure: 1.0-1.5 psi. Maximum working pressure: inlet = 150 psi, back = 100 psi.

**Flow Indicator (F)**

Machined cast acrylic, PVC connections, ceramic ball, polypropylene ball stop, PVC half unions, FKM seals (optional EPDM).

**Y Strainer (S)**

PVC body, FKM seals (optional EPDM).

**MS-6 Chemical Feed Flowmeter (FVS)**

PVDF & PEEK body, PVC socket weld connections, FKM seals (optional EPDM). Available working flow ranges

**Universal mounting blocks**

PVC

**Pump extended mounting brackets**

316 Stainless Steel

**Skid mounting foot / wall pads**

316 Stainless Steel

**Mounting hardware**

18-8 Stainless Steel

**Drip Tray**

Polypropylene, 16" x 21" x 3" - 4 gallons total containment

**Maximum working pressure**

150 psig (10.3 bar)

**Operating Temperature**

14°F to 115°F (-10°C to 46°C)

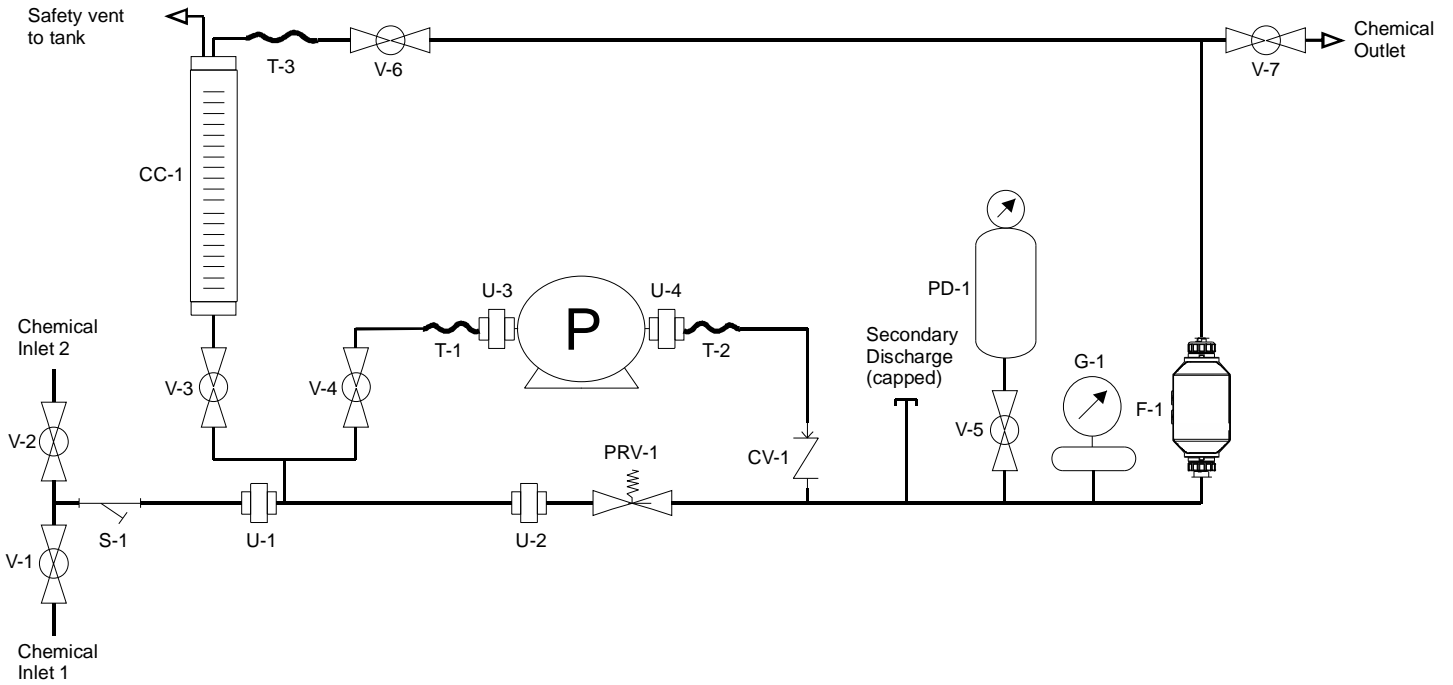
**Approximate Shipping Weight (pump ships separately)**

Single Pump System: 60 lb. (27.2 Kg)

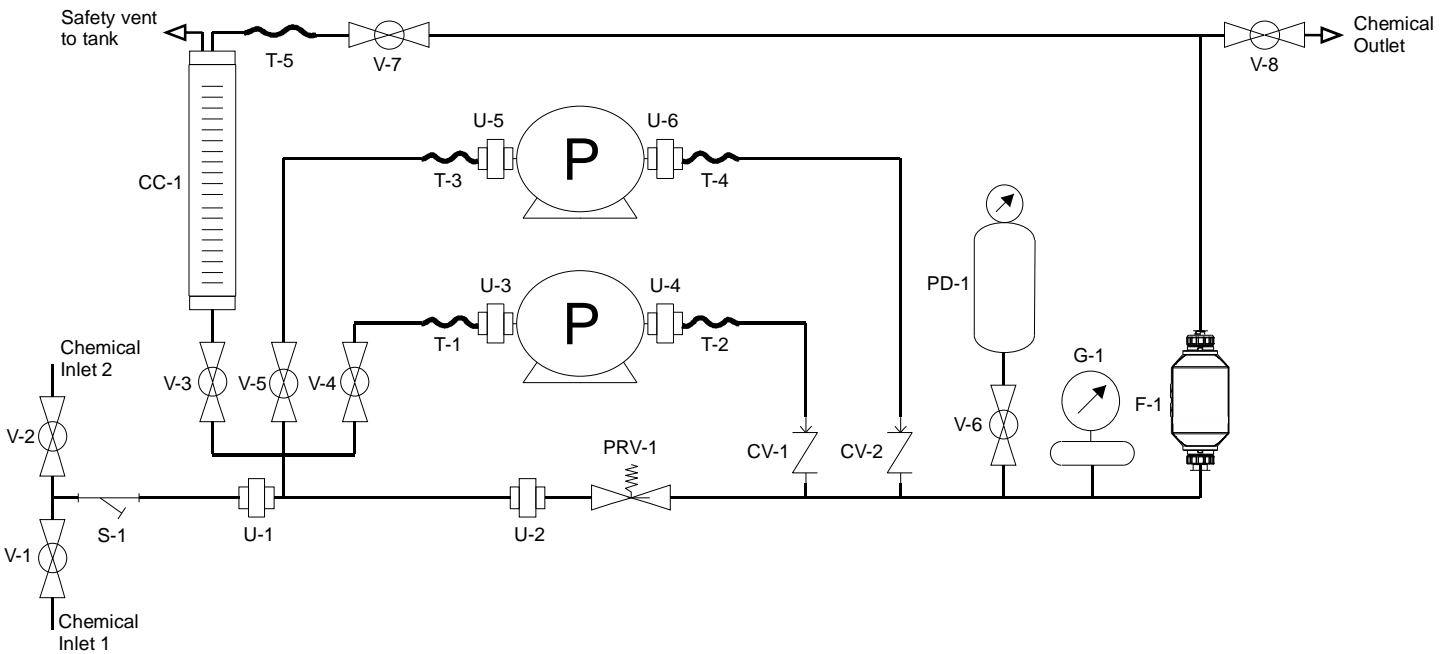
Dual Pump System: 70 lb. (31.8 Kg)

**Piping and Instrumentation Diagrams:**

**Single Pump Skids:**



**Dual Pump Skids:**

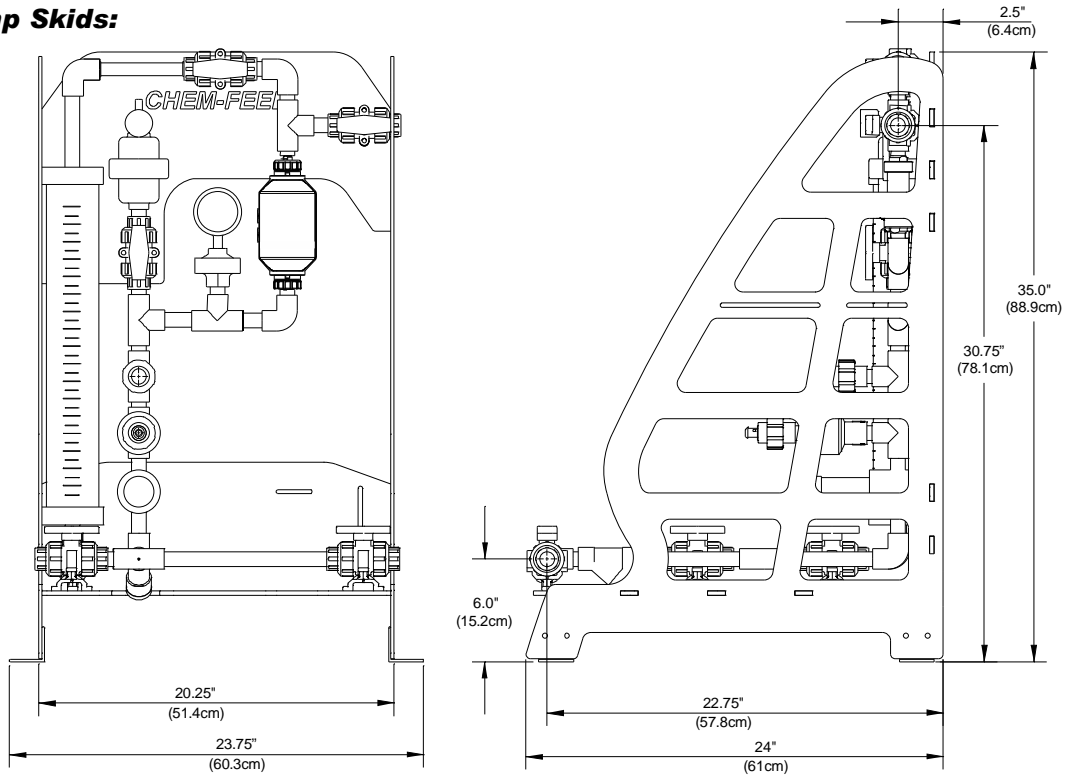


# CHEM-FEED® ProSeries-M® Engineered Skid System

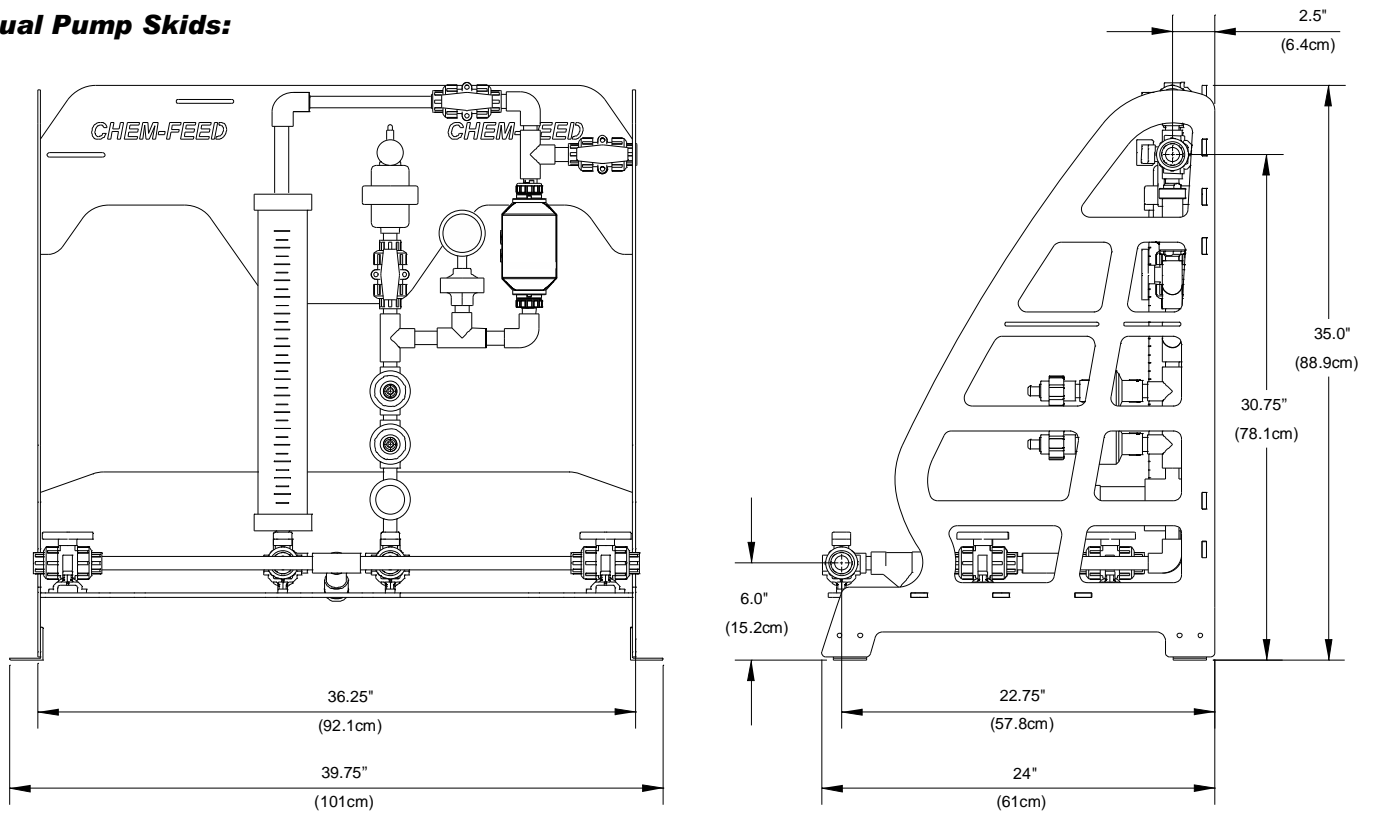
## Engineering and Technical Data

### Dimensions:

#### Single Pump Skids:



#### Dual Pump Skids:



# CHEM-FEED® ProSeries-M® Engineered Skid System

## Engineering and Technical Data

Suggested Model Variations (see model number matrix below for additional variations):

### Suggested Models for Flex-Pro Peristaltic Pump Applications

Number of Pumps	Piping & Seals	Inlet Strainer	Calibration Cylinder	Pressure Relief Valve	Pulsation Dampener	Pressure Gauge w/Guard	Check Valve	Chem-Feed Skid Model Number
One	PVC/FKM	NO	NO	YES	NO	NO	YES	CFS-1AA-XXXX
One	PVC/EPDM	NO	NO	YES	NO	NO	YES	CFS-1BA-XXXX
Two	PVC/FKM	NO	NO	YES	NO	NO	YES	CFS-2AA-XXXX
Two	PVC/EPDM	NO	NO	YES	NO	NO	YES	CFS-2BA-XXXX

### Suggested Models for Chem-Pro Diaphragm Pump Applications

Number of Pumps	Piping & Seals	Inlet Strainer	Calibration Cylinder	Pressure Relief Valve	Pulsation Dampener	Pressure Gauge w/Guard	Check Valve	Chem-Feed Skid Model Number
One	PVC/FKM	YES	32 GPH	YES	YES	200 PSI	YES	CFS-1AA-XAAA
One	PVC/EPDM	YES	32 GPH	YES	YES	200 PSI	YES	CFS-1BA-XAAA
Two	PVC/FKM	YES	32 GPH	YES	YES	200 PSI	YES	CFS-2AA-XAAA
Two	PVC/EPDM	YES	32 GPH	YES	YES	200 PSI	YES	CFS-2BA-XAAA

## Model Number Matrix:

Chem-Feed Engineered Skid System Matrix										
System type										
CFS-1	Single pump system - single chemical / single outlet									
CFS-2	Dual pump system - single chemical / single outlet									
Piping / Valves / Unions / Seal Materials										
A	PVC piping, FKM seals, 3/4" OD PVC braided tubing connections									
B	PVC piping, EPDM seals, 3/4" OD PVC braided tubing connections									
C	PVC piping, FKM seals, 3/8" OD Polyethylene tubing connections									
D	PVC piping, EPDM seals, 3/8" OD Polyethylene tubing connections									
X	Skid Frame only without piping									
Structure Assembly Materials										
A	Chemical resistant powder coated aluminum stand with 316SS mounting pads									
Chemical Feed Flowmeter										
A	Model MS-612 Chemical Feed Flowmeter with meter mount display, 10-5,000 ml/min (0.158 - 79.2 GPH)									
B	Model MS-622 Chemical Feed Flowmeter with meter mount display, 100-10,000 ml/min (1.58 - 158.0 GPH)									
C	Model MS-611 Chemical Feed Flowmeter with remote mount display, 10-5,000 ml/min (0.158 - 79.2 GPH)									
D	Model MS-621 Chemical Feed Flowmeter with remote mount display, 100-10,000 ml/min (1.58 - 158.0 GPH)									
X	None									
Calibration Cylinder										
	PVC									
	Glass									
1.6 GPH (100 ml)	E	S								
4 GPH (250 ml)	D	R								
8 GPH (500 ml)	C	Q								
16 GPH (1000 ml)	B	P								
32 GPH (2000 ml)	A									
X	None									
Pulsation Dampener										
A	10 cubic inch, CPVC body, PTFE diaphragm									
X	None									
Pressure Gauge w/Guard										
A	200 PSI gauge, PTFE diaphragm									
B	100 PSI gauge, PTFE diaphragm									
C	30 PSI gauge, PTFE diaphragm									
X	None									
Miscellaneous Options - (leave blank if not specified)										
A	Isolation ball shut-off valves at check valves									
R	Outlet plumbing and calibration column position switched (Only available on the dual skid)									
1	Install a specific pump model on the skid and perform pressure and fluid testing									
2	Install two specific pump models on the skid and perform pressure and fluid testing									
CFS-1	A	A	-	X	A	X	B	-	A	Sample Chem-Feed Engineered Skid System Part Number

# CHEM-FEED® ProSeries-M® Engineered Skid System

## Engineering and Technical Data

### ProSeries Pumps:

ProSeries Pump Features (see the specific technical data sheets for additional pump features)	Flex-Pro Peristaltic	Chem-Pro Diaphragm
Valveless peristaltic technology self primes against maximum back pressure. Cannot Vapor lock.	•	
Diaphragm technology for system pressures to 175 PSI. PVDF/Ceramic/TFEp head resists most chemicals.		•
SCADA Input: Remote speed control via 4-20mA, 0-10VDC, high speed digital pulse, contact closure pulse	•	•
SCADA Input: One, contact closure (remote start / stop)	•	
Remote/Local control lockout settings	•	
SCADA Output: One, high switching current alarm relay	•	•
SCADA Output: Three, dry contact or maximum 30VDC/115VAC 1 amp contact closures	•	
SCADA Output: Programmable 4-20mA signal or high speed pulse, proportional to pump output	•	•
TFD (Tube Failure Detection) or DFD (Tube Failure Detection) System Alarm	•	•
FVS (Flow Verification System) Alarm *	•	•
NEMA 4X (IP66) wash-down rating	•	•
Variable speed motor	•	•
Variable speed brush-less DC motor	•	

### Chem-Pro® Diaphragm Pump Models:

For additional pump models and more information visit our website at [www.ProSeries-M.com](http://www.ProSeries-M.com) or call Blue-White Industries at 714-893-8529

Feed Rate Operating Range			Maximum Pressure	Maximum Speed	Pumphead Materials	Chem-Pro Model Numbers	
GPH	LPH	ML/Min	PSI (bar)	Strokes per Minute		115V AC	230V AC
.07 - 7.1	.27 - 27.0	4.5 - 450	175 (12.0)	166	PVDF/PTFE/Ceramic/TFEp	MC-2243XVA	MC-2253XVA
.13 - 12.7	.48 - 48.0	8.0 - 800	175 (12.0)	166	PVDF/PTFE/Ceramic/TFEp	MC-2241XVA	MC-2251XVA
.20 - 20.3	.77 - 76.8	12.8 - 1280	175 (12.0)	166	PVDF/PTFE/Ceramic/TFEp	MC-2242XVA	MC-2252XVA
.42 - 42.0	1.59 - 159	26.5 - 2650	100 (6.8)	130	PVDF/PTFE/Ceramic/TFEp	MC-3242XVA	MC-3252XVA

Note: MD-3 models also available.

### ProSeries-M® Peristaltic Pump Models:

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Feed Rate Operating Range			Pump Tube Material	Maximum Pressure	Maximum Speed	Flex-Pro Model Numbers	
GPH	LPH	ML/Min		PSI (bar)	RPM	115V AC	230V AC
.0002 - 2.10	.0007 - 7.92	.0132 - 132	Flex-A-Prene®	125 (8.6)	125	M-324-MND	M-325-MND
.0017 - 17.4	.0066 - 66.0	.1097 - 1097	Flex-A-Prene®	125 (8.6)	125	M-324-MNH	M-325-MNH
.0033 - 33.3	.0126 - 126	.2100 - 2100	Flex-A-Prene®	125 (8.6)	125	M-324-MNK	M-325-MNK
.0050 - 50.7	.0192 - 192	.3200 - 3200	Flex-A-Prene®	80 (5.5)	125	M-424-MNK	M-424-MNK
.0100 - 100.0	.0378 - 378	.6300 - 6300	Flex-A-Prene®	50 (3.4)	125	M-424-MNL	M-425-MNL
.0158 - 158.5	.0600 - 600	1.000 - 10000	Flex-A-Prene®	30 (2.1)	125	M-424-MNP	M-425-MNP
.0015 - 15.06	.0057 - 57.0	.0950 - 950	Flex-A-Chem®	50 (3.4)	125	M-324-MTH	M-325-MTH
.0035 - 35.1	.0133 - 133.2	.2220 - 2220	Flex-A-Chem®	50 (3.4)	125	M-324-MTK	M-325-MTK
.0004 - 4.60	.0017 - 17.4	.0290 - 290	Flex-A-Thane®	65 (4.5)	125	M-324-MGE	M-325-MGE
.0010 - 10.1	.0038 - 38.4	.0637 - 637	Flex-A-Thane®	65 (4.5)	125	M-324-MGG	M-325-MGG
.0028 - 28.5	.0108 - 108	.1800 - 1800	Flex-A-Thane®	65 (4.5)	125	M-324-MGK	M-325-MGK
.0055 - 55.5	.0210 - 210	.3500 - 3500	Flex-A-Thane®	65 (4.5)	125	M-424-MGK	M-425-MGK
.0100 - 100.0	.0378 - 378	.6300 - 6300	Flex-A-Thane®	65 (4.5)	125	M-424-MGKK	M-425-MGKK

Note: M-2 models also available.

Tubing chemical resistance data

Flex-A-Prene® Tubing Meets FDA criteria for food   Excellent chemical resistance				
Alcohol general	Brine solutions	Ferrous sulfate	Iodine	Sodium hydroxide 50%
Aluminum sulfate	Calcium hypochlorite 20%	Formic acid	Magnesium chloride	Sodium Bisulfite
Ammonium chloride	Ethylene glycol	Glucose	Magnesium sulfate	Sodium Hypochlorite 12.5%
Ammonium hydroxide	Ferric chloride	Hydrochloric acid 33%	Phosphoric acid	Sodium sulfide
Ammonium Sulfate (LAS)	Ferric nitrate	Hydrocyanic acid	Plating solutions	Sulfuric acid up to 50%
Benzyl alcohol	Ferric sulfate	Hydrogen peroxide	Potassium hydroxide	Tannic acid
Bleach	Ferrous chloride - 43% in water	Hypochlorous acid	Propylene glycol	

Flex-A-Chem® Tubing - Ultra smooth plasticizer-free bore (inner liner) Meets FDA criteria for food   Superior chemical resistance				
Ferrous Chloride (up to 40%)	Hydrofluoric Acid (up to 48%)	Potassium Hypochlorite (up to 70%)	Bases	Alcohols
Fluoboric Acid (up to 48%)	Nitric Acid (up to 71%)	Sodium Phosphate (up to 30%)	Salts	Isobutyl Alcohol
Fluosilicic Acid (up to 25%)	Phosphoric Acid (up to 85%)	Sulfuric Acid (up to 98%)	Ketones	

Flex-A-Thane® Tubing Meets FDA criteria for food   Resistant to oils, greases and fuels				
Cyclohexane	Heptane	Mineral spirits	ASTM reference No.1,2,3	Oils:
Diesel Fuel	Hexane	Soap solutions	Castor	Linseed
Fatty acids	Kerosene	Turpentine	Coconut	Lubricating
Gasoline	Lard	Oils:	Fuel	Mineral

Note: Data shown at 72 degrees F.