

The MaxFLOW™ assemblies are used in a variety of petroleum products stored in tanks. Standard chemical aromatic resistance starting at 70% to 100% compatibility upon customer request. MaxFLOW™ assemblies are manufactured in U.S.A with the strictest of quality control procedures in accordance to ISO 9001 quality management standards.

## MAXFLOW™ SS ROOF DRAIN

### FEATURES

- FASTEST DELIVERY TIME
- SINGLE-COIL REPEATED LAY PATTERN
- 150 LBS RF FLANGES
- 100% MADE IN THE USA
- FULL 5 YEAR WARRANTY
- UNPARALLELED SERVICE LIFE

## PRODUCT SPECIFICATIONS

Chemical	Compatibility with Nitrile*
Acetic Acid (Glacial)	NR
Acetone	NR
Acrylic Acid	NR
Acrylonitrile	NR
AV-Gas	A
Benzene (Benzol)	NR
Biodiesel	A to 250°F
Bunker C Fuel	A to 250°F

Chemical	Compatibility with Nitrile*
Bunker Oil	A to 250°F
Caustic Soda (Sodium Hydroxide)	B
Crude Oil (Sour)	A
Crude Oil (Low Sulphurs)	A
Cumene	NR
Diesel # 2	A
Diethanolomene	NR
Distillate Gasoline (50% Aromatic)	A

Chemical	Compatibility with Nitrile*
Ethanol	A
Gasoline / MBTE 80/20	C
Gasoline	A
Hexane	A
Hexene	B
Hydrazine	C
Kerosene	A

Chemical	Compatibility with Nitrile*
70% ASTM Fuel C / 30% MBTE	B
Methanol	A
MBTE (100%)	NR
Naphtha (Petroleum)	A
Octane	A
Toluene	NR
Xylene	NR

\*KEY: A = Excellent Resistance • B = Good Resistance • C = Conditional • NR = Not Recommended

**Disclaimer:**

\*MaxFlow Roof Drain system rated for 300°F in crude oil applications only. Temperature ratings to maximum 300°F unless otherwise indicated. Consult Charter Industrial – Petroleum Tank Products for assistance and clarification.





**MAXFLOW™ SS**  
**ROOF DRAIN**

**STAINLESS STEEL**  
**JACKETED ROOF DRAIN**

**ADVANTAGES**

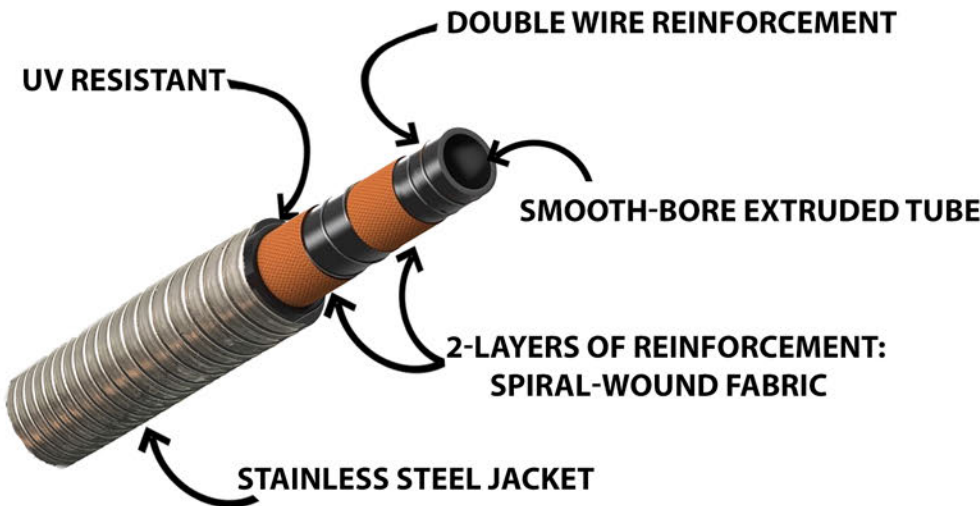
**FASTEST LEAD TIME IN THE**  
**INDUSTRY**

Charter's MaxFlow SS roof drain is the most efficient, resilient, reliable, and most widely used roof drain product in the AST industry. All MaxFlow SS hoses are specially engineered and manufactured by Charter Industrial roof drain experts with over 30 years of experience and backed with the most expansive 5 year warranty available.

- INTERNALLY EXPANDED:**
- FULL FLOW DESIGN
  - SMOOTH BORE FLUID WAY

- CONSTRUCTION:**
- HIGH CARBON STEEL WIRE REINFORCEMENT
  - AIR TIGHT SEAL - HOSE TO FITTING
  - STAINLESS STEEL EXOSKELETAL JACKET
  - NITRILE RUBBER COMPOUND (-40°F - 300°F) IN CRUDE OIL
  - WORKING PRESSURE 150 PSI
  - 70% TO 100% AROMATIC IN MOST PETROLEUM PRODUCTS

**PRODUCT SPECIFICATIONS**



Disclaimer:  
 \*MaxFlow Roof Drain system rated for 300°F in crude oil applications only. Temperature ratings to maximum 300°F unless otherwise indicated. Consult Charter Industrial – Petroleum Tank Products for assistance and clarification.



UV RESISTANT



OVER 30 YEARS  
 MANUFACTURING  
 EXPERIENCE

**VAPOR-SLEEVE™**  
**GAUGE POLE COVERS**

FEATURES

- Reduce Product Loss Costs
- Minimize Product Emissions
- Improved Zipper Design
- "Single Pass" Zipper Closure
- More than 2x Faster Installation
- Waterproof
- Air Tight

PRODUCT ATTRIBUTES



DESCRIPTION	TEST METHOD Ref std	SPECIFIED VALUE (0.025)
Type of coating		Both side PU
Color		Black / Grey
Embossing		181 or As per order
Width (cms)	FPS/TM/2 IS 7016 Part I	137 or As per order.
Thickness (inch)	FPS/TM/3 IS 7016 Part I/ISO 1421	0.025 minimum
Total weight (gsm)	FPS/TM/1 IS 7016 Part I	800 (approx.)
Break Strength (N) Warp Weft	FPS/TM/4 IS: 7016 Part-II/ISO 1421	850 min 850 min
Tear Strength (N) (Tongue tear/ 5cm) Warp Weft	BS3424 7 A	250 min 250 min
Abrasion Resistance (loss in weight)	ASTM D-3389 Taber Wheel H-22 1kg load	< 35 mg loss /1000 cycle

Consult Charter Industrial – Petroleum Tank Products for assistance regarding lead time and availability.





UV RESISTANT



## VAPOR-SLEEVE™ GAUGE POLE COVERS

### FEATURES

Reduce Product Loss Costs

Minimize Product Emissions

Improved Zipper Design

- "Single Pass" Zipper Closure
- More than 2x Faster Installation
- Waterproof
- Air Tight

Charter Vapor-Sleeve gauge pole covers are made from our ALL-CHEM PU-2035 fabrics which offer supreme UV protections and industry leading chemical compatibility. Charter's Vapor-Sleeve is engineered for MAXIMUM flexibility while maintaining the highest possible puncture/abrasion resistance.

(See PU-2035 literature for more material details)

## CHEMICAL COMPATIBILITY

COMPLY WITH REGULATIONS AND STANDARDS

ALLOWS REAL TIME PRODUCT MEASUREMENT WITHOUT PRODUCT LOSS

EXTREMELY FLEXIBLE DESIGN WHILE MAINTAINING SHAPE AND FUNCTION

EXCELLENT CHEMICAL RESISTANCE AND UV PROTECTION

PROPRIETARY TRANSITION BOX-SUPERIOR VAPOR RETENTION & LEAK PREVENTION

SPECIALLY DESIGNED PER ORDER

INSTALLS DURING OPERATION



**9001:2008**  
REGISTERED

Tank Products	Rating	Tank Products	Rating
Acetone	D	Diesel #2	A
Acetyl Bromide	D	Diesel Oil	A
Acetyl Chloride	D	Ethanol	A
Acrylonitrile	D	Ethylene Glycol	A
Alcohol - Ethyl	D	Gasoline	A
Alcohol - Methyl	D	Heptane	A
Allyl Chloride	D	Hexane	A
ASTM Fuel A	A	Isooctane	A
ASTM Fuel B	A	Jet "A"	A
ASTM Fuel C	A	Kerosene	A
ASTM Oil #1	A	Methyl Ethyl Ketone	D
ASTM Oil #2	A	MTBE 100%	A
ASTM Oil #3	A	Naphtha	A
Aviation Gasoline	A	Pentane	D
Benzene	D	Propylene Glycol	A
Butyl Acetate	D	Water	B
Crude Oil (Sour)	A	Toluene	A
Crude Oil (Low Sulpher)	A	Vinyl Acetate	D
Cyclohexane	A	Xylene	D

A	Suitable for continuous liquid and vapor service. Consult Charter Industrial for chemical products not shown.
B	Suitable for intermittent liquid services and continuous vapor services.
C	Suitable for intermittent services.
D	Not Recommended

Consult Charter Industrial – Petroleum Tank Products for assistance regarding lead time and availability.





## PRODUCT ATTRIBUTES



DESCRIPTION	TEST METHOD Ref std	SPECIFIED VALUE (0.025)
Type of coating		Both side PU
Color		Black / Grey
Embossing		181 or As per order
Width (cms)	<b>FPS/TM/2</b> IS 7016 Part I	137 or As per order.
Thickness (inch)	<b>FPS/TM/3</b> IS 7016 Part I/ISO 1421	0.025 minimum
Total weight (gsm)	<b>FPS/TM/1</b> IS 7016 Part I	800 (approx.)
Break Strength (N) Warp Weft	<b>FPS/TM/4</b> IS: 7016 Part-II/ISO 1421	850 min 850 min
Tear Strength (N) (Tongue tear/ 5cm) Warp Weft	<b>BS3424 7 A</b>	250 min 250 min
Abrasion Resistance (loss in weight)	ASTM D-3389 Taber Wheel H-22 1kg load	< 35 mg loss /1000 cycle

Consult Charter Industrial – Petroleum Tank Products for assistance regarding lead time and availability.



Charter Industrial's Leg Socks reduce hydrocarbon vapor losses and product losses. Charter Industrial manufactures all Petroleum Storage Tank Solutions in accordance to the highest industry standards as a certified ISO 9001 registered company.

(See PU-2035 literature for more material details)

## LEG - SOCKS

UV RESISTANT



## FEATURES

Reduce Product Loss Costs

Reduce Hydrocarbon Vapor Loss

Manufactured to Highest Quality Standards - ISO 9001 Certified

Rated for Use in Ethanol Applications

## CHEMICAL COMPATIBILITY

Tank Products	Rating	Tank Products	Rating
Acetone	D	Diesel #2	A
Acetyl Bromide	D	Diesel Oil	A
Acetyl Chloride	D	Ethanol	A
Acrylonitrile	D	Ethylene Glycol	A
Alcohol - Ethyl	D	Gasoline	A
Alcohol - Methyl	D	Heptane	A
Allyl Chloride	D	Hexane	A
ASTM Fuel A	A	Isooctane	A
ASTM Fuel B	A	Jet "A"	A
ASTM Fuel C	A	Kerosene	A
ASTM Oil #1	A	Methyl Ethyl Ketone	D
ASTM Oil #2	A	MTBE 100%	A
ASTM Oil #3	A	Naphtha	A
Aviation Gasoline	A	Pentane	D
Benzene	D	Propylene Glycol	A
Butyl Acetate	D	Water	B
Crude Oil (Sour)	A	Toluene	A
Crude Oil (Low Sulpher)	A	Vinyl Acetate	D
Cyclohexane	A	Xylene	D

A	Suitable for continuous liquid and vapor service. Consult Charter Industrial for chemical products not shown.
B	Suitable for intermittent liquid services and continuous vapor services.
C	Suitable for intermittent services.
D	Not Recommended

EXCELLENT CHEMICAL RESISTANCE AND UV PROTECTION

SPECIALLY DESIGNED PER ORDER

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UV RESISTANT



# PTFE

## COATED FIBERGLASS

### 550°F

## APPLICATIONS

Primary Tank Seals  
Secondary Tank Seals

Charter's PTFE coated fiberglass fabrics offer the optimal combination of PTFE chemical compatibility with the superior mechanical and temperature properties of a woven fiberglass fabric. Our PTFE material offers the highest chemical resistance, 100% aromatic rating, and the highest temperature rating possible in the most demanding and abrasive applications.

## PRODUCT ATTRIBUTES

Style No.	Thickness	Weight	Dielectric Strength	Break Strength	Roll Width
	Inch	oz/sy	Volt	lb/inch	(up to) Inch
<b>TCF1000-03</b>	0.003	4.3	2250	70x50	49.2
<b>TCF1000-04</b>	0.004	5.2	2250	100x80	49.2
<b>TCF1000-05</b>	0.005	7.5	3500	120x100	49.2
<b>TCF1000-06</b>	0.006	8.6	5000	120x100	49.2
<b>TCF1000-08</b>	0.008	12.2	4500	130x110	49.2
<b>TCF1000-10</b>	0.010	15	5500	225x175	86.6
<b>TCF1000-11</b>	0.011	17	7000	225x175	86.6
<b>TCF1000-14</b>	0.014	20	3500	400x250	86.6
<b>TCF1000-20</b>	0.020	30.3	8000	350x200	86.6
Temperature Rating of <i>base fabric</i>			1000°F		
Temperature Rating of <i>coating</i>			-100 ~+550°F		

500°F RATED  
FIBERGLASS REINFORCED  
PTFE COATED FABRIC



**Disclaimer:**

Above values are nominal and are not to be considered as specifications. Overall temperature rating is based on the highest temperature rated component (reinforcement). Consult Charter Industrial – Petroleum Tank Products for assistance.



# PTFE COATED FIBERGLASS

## 550°F

### TEST RESULTS

#### ASTM D1204-14

##### High Temperature Resistance Analysis (160°F)

Sample ID	(a-t)''	(x-y)''	$\Delta(a-t)$ ''	$\Delta(x-y)$ ''	Result
PTFE-1	9.9185 (9.915)	9.8700 (9.969)	0.004	-0.001	PASS
PTFE-2	10.0075 (10.0088)	9.9095 (9.915)	0.001	0.0055	PASS

#### ASTM D751

##### Torque Tear Analysis

Sample ID	Max Load						
	Test 1	Test 2	Test 3	Test 4	Test 5	Ave.	Std. Dev.
PTFE 10-Warp	3.821	4.121	3.821	4.945	3.971	4.1	0.5
PTFE 10-Fill	7.793	8.992	8.392	10.416	10.416	9.2	1.2

#### ASTM D3884

##### Abrasion Resistance Analysis

Sample ID	Initial Mass (g)	Post Mass (g)	Mass Loss (g)	Wear Index (mg/1,000 cycles)	Cycles
PTFE 10	33.9433	33.2545	0.68885	137.77	5,000

#### ASTM D1056-14

##### Low Temperature Resistance Analysis (-45°F)

Sample ID	1/2" mandrel	1/8" mandrel	Observations
PTFE	PASS	PASS	No Cracks

#### MIL-C-20696E

##### Oil Resistance Testing

Sample ID	Result	Observations
PTFE	PASS	No Leakage

#### MIL-C-20696E

##### Resistance to Aromatic Hydrocarbon Testing

Sample ID	Result	Observations
PTFE – Ref. Fuel D	PASS	No Damage Observed
PTFE – Ethanol	PASS	No Damage Observed

#### Disclaimer:

Above values are nominal and are not to be considered as specifications. Overall temperature rating is based on the highest temperature rated component (reinforcement). Consult Charter Industrial – Petroleum Tank Products for assistance.





**REINFORCED  
POLYURETHANE FABRICS**

**TESTED FOR  
ETHANOL  
APPLICATIONS**

## TEST RESULTS

### ASTM D1204-14

#### High Temperature Resistance Analysis (160°F)

Sample ID	(a-t)''	(x-y)''	Δ(a-t)''	Δ(x-y)''	Result
20 mil 1	9.9100 (9.9135)	9.9870 (9.9405)	0.004	-0.047	PASS
20 mil 2	10.1565 (10.1575)	10.0265 (9.9830)	0.001	-0.044	PASS
25 mil 1	10.1740 (10.1760)	10.0900 (10.055)	0.002	-0.035	PASS
25 mil 2	9.9020 (9.9095)	9.9500 (9.9650)	0.008	0.015	PASS

### MIL-C-20696E

#### Resistance to Aromatic Hydrocarbon Testing

Sample ID	Result	Observations
20mil - Ref. Fuel D	PASS	No Damage Observed
25mil - Ref. Fuel D	PASS	No Damage Observed
20mil - Ethanol	PASS	No Damage Observed
25mil - Ethanol	PASS	No Damage Observed

### MIL-C-20696E

#### Lubricating Oil Resistance Testing

Sample ID	Result	Observations
20mil	PASS	No Leakage
25mil	PASS	No Leakage

### ASTM D1056-14

#### Low Temperature Resistance Analysis

Sample ID	1/2" mandrel	1/8" mandrel	Observations
20mil	PASS	PASS	No Cracks
25mil	PASS	PASS	No Cracks

### ASTM D751

#### Torque Tear Analysis

Sample ID	Max Load						
	Test 1	Test 2	Test 3	Test 4	Test 5	Ave.	Std. Dev.
20mil-Warp	46.01	48.184	45.036	42.638	88.424	54.1	19.3
20mil-Fill	68.341	78.008	88.05	72.838	92.171	79.9	10.1
25mil-Warp	73.212	71.039	78.308	71.863	98.241	78.5	11.4
25mil-Fill	67.517	74.112	90.747	81.605	76.884	78.2	8.7

### ASTM D3884

#### Abrasion Resistance Analysis -

Sample ID	Initial Mass (g)	Post Mass (g)	Mass Loss (g)	Wear Index (mg/1,000 cycles)	Cycles
20mil	41.14123	41.08491	0.05632	11.26	5,000
25mil	38.4285	38.34641	0.08209	16.42	5,000

## APPLICATIONS

**Gauge Pole Covers - Leg Boots**

**Primary Seal Curtain - Secondary Seal Curtain - Pontoon Liners**

#### Disclaimer:

Above values are nominal and are not to be considered as specifications.  
Consult Charter Industrial - Petroleum Tank Products for assistance.



**9001:2008**  
REGISTERED





## REINFORCED POLYURETHANE FABRICS

**EXTRUDED URETHANE  
 NOT LAMINATED!**

### APPLICATIONS

- Gauge Pole Covers
- Leg Boots
- Primary Seal Curtain
- Secondary Seal Curtain
- Pontoon Liners

Charter urethane products are **EXTRUDED** urethane fabric, as opposed to be produced via a two-layer lamination process. The end result is complete fusion of the layers. This process offers significant benefits to structure, integrity and strength that makes this urethane's chemical compatibility, flexibility, and abrasion resistance unmatched by the competition.

## PRODUCT SPECIFICATIONS

DESCRIPTION	SPECIFIED VALUE (0.020)	SPECIFIED VALUE (0.025)	SPECIFIED VALUE (0.035)
Type of coating	Both side PU	Both side PU	Both side PU
Color	Black / Grey	Black / Grey	Black / Grey
Thickness (inch)	Actual 0.020 in	Actual 0.025 in	Actual 0.035 in
Total weight (oz/sq yd)	± 19.17 oz/sq yd	± 23.59 oz/sq yd	± 32.44 oz/sq yd
Tensile Warp	103.412 Lbf	191.088 Lbf	247.289 Lbf
Tear Strength (Lbf) Warp	29 Lbf	56 Lbf	56 Lbf
Abrasion Resistance (loss in weight)	< 11 mg loss /1000 cycle	< 16 mg loss /1000 cycle	< 21 mg loss /1000 cycle

\* "Urethane samples showed superior minimal loss of mass after 5,000 cycles"





## SWIVEL JOINTS & SWING JOINTS

### OPTIONS

Stainless Steel  
 Carbon Steel  
 Raised Face  
 Flat Face  
 Viton Seal  
 Buna Seal  
 From 2" - 48"

## PRODUCT SPECIFICATIONS

Item	Swivel Joint	Swing Joint
Rating	ASME 150#	ASME 150#
Flange Face	Raised Face	Flat Face
Material Construction	Carbon Steel, Stainless steel	Carbon Steel, Stainless Steel
Features	<ul style="list-style-type: none"> <li>- Welding type</li> <li>- Swivel Assembly</li> <li>- Hardened dual ball bearing racing</li> <li>- Sealing: Viton, NBR</li> </ul>	<ul style="list-style-type: none"> <li>- Casting type</li> <li>- Symmetrical shape</li> <li>- Inlet/Outlet on the same center line</li> <li>- Sealing: Viton, NBR</li> <li>- Easy to maintenance through side opening</li> <li>- Available Ni-resist bushing</li> </ul>
Available Sizes	2" ~ 48" and larger	8" ~ 48" and larger



Consult Charter Industrial – Petroleum Tank Products for assistance regarding lead time and availability.