

# P-72

## PROCESS PIPING



Special process piping for

electrolytic cells in

the production of

chlor-alkali and

chlorate chemicals; and pulp

bleaching chemicals



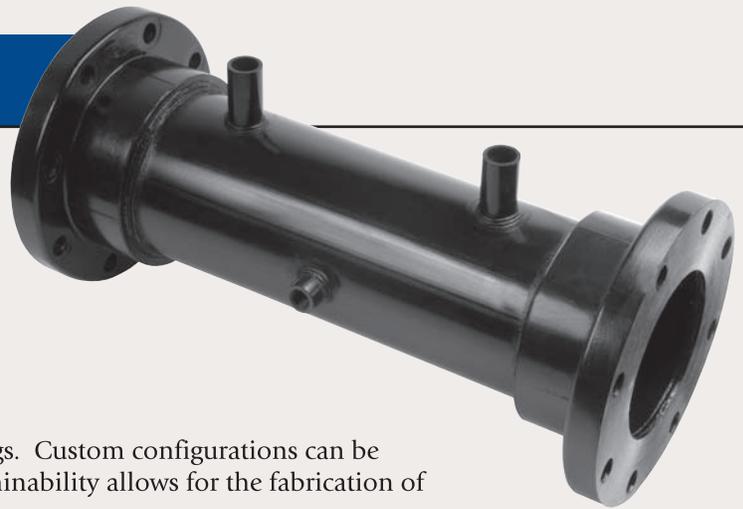
**PRINCE**  
RUBBER & PLASTICS CO., INC



# What is P-72?

- **P-72** is a proprietary compound developed by Prince Rubber & Plastics specifically for the chlor-alkali, chlorate and pulp bleaching chemical industries.
- **P-72** pipe is a styrene copolymer thermoplastic.
- **P-72** is extruded into pipe, and molded into sheet and fittings. Custom configurations can be molded, extruded or thermoformed. Its excellent machinability allows for the fabrication of many accessory parts.
- **P-72** pipe is extruded in Schedules 40, 80, and 120 sizes, with the available option of FRP overwrap.
- **P-72** can be solvent-welded, thermally rod-welded and heat butt-welded, making ease of field installations and special fabrications.
- **P-72** can be utilized at temperatures up to 212° F (100° C). Overwrapping with FRP can extend P-72's temperature and pressure ratings higher when desired.
- **P-72** has benefitted companies worldwide with extended service life of piping systems and accessory parts, due to its excellent corrosion resistance and high temperature capabilities.

*References available upon request.*



## P-72 Advantages

- Excellent chemical resistance.
- P-72 can be used for all piping requirements throughout the entire cell room. This simplifies both material requirements and installation.
- Wide temperature range, typically through 212° F (100° C).
- Non-conductive and resistant to electrolytic attack.
- Wide range of pipe and fitting sizes.
- Lightweight and easy to install.
- Easy to join, minimal tools required, minimal training required.
- Easy to thermoform, machine and fabricate.
- Dependable connections.
- Smooth surfaces create low coefficient of friction, for minimal pressure loss.
- Easily FRP reinforced for more severe service conditions.\*
- Competitive installed cost compared to alternative materials.
- Suitable for indoor and outdoor applications.
- Resistant to UV and ozone attack.

*\*Consult your technical representative regarding individual applications.*



Table I

<b>P-72 Compound of Styrene Copolymer</b>			
<b>Representative Physical Properties*</b>			
<b>PROPERTY</b>		<b>(ASTM)</b>	<b>RESULT</b>
Color			Black
Hardness Rockwell "R"		(D-785)	115
Specific Gravity		(D-792)	1.07
Tensile Strength 73° F		(D-638)	7000 (PSI)
Tensile Modulus 73° F, 10 <sup>5</sup>		(D-638)	3.4 (PSI)
Impact Strength, Izod Notched 73° F		(D-256)	3.0 ft./lb.
Heat Deflection Temperature			
1/2" Bar Annealed	(264 PSI)	(D-648)	250° F
1/2" Bar Annealed	(66 PSI)	(D-648)	260° F
1/2" Bar Annealed	(0 PSI)	(D-648)	262° F
1/2" Bar Un-Annealed	(264 PSI)	(D-648)	232° F
Flexural Yield Strength (Procedure B)		(D-790)	12,000 (PSI)
Flexural Modulus at 73° F x 10 <sup>5</sup>		(D-790)	3.6 (PSI)
Coefficient Thermal Expansion			
in./in./°F x 10 <sup>-5</sup>		(D-696)	4.0
Dielectric Strength (Short time 1/8")		(D-149)	300-450 Volts/Mil.

### **P-72 Pipe - Stress Relieved**

P-72 Pipe is now stress relieved for maximum performance.

Stress relieving the pipe ensures that limited stresses produced in the extrusion process are removed, and maximum physical properties are retained in the final product.

This enables piping systems built with this product to have a longer potential life.

*\*The physical properties and chemical recommendations noted are to be used as a guide only and are based on tests believed to be reliable; however, we do not guarantee these results to be obtained by others.*

## **Chemical Resistance of P-72**

This Styrene Copolymer has excellent resistance to alkalis, mineral acids, phosphoric and oleic acids, and mineral oils, as well the materials shown on Table II. We do not recommend P-72 with low molecular weight aromatics, ketones, esters or polychlorinated hydrocarbons.

P-72 is applicable for many other industrial chemicals. This brochure pertains to the chlor-alkali, chlorate and pulp bleaching processes. Other chemical resistance information is available upon request.

Table II

### **Typical P-72 Service Applications**

- Hot, Wet Chlorine Gas**
- Sodium Hydroxide (Caustic Soda to 50% conc.)**
- Potassium Hydroxide (to 33% conc.)**
- Hydrogen Gas**
- Sodium Chlorate**
- High pH Sodium Hypochlorite**
- Brine (Sodium and Potassium Chlorides)**
- Ultra-Pure Brine**
- Alkaline Brine**
- Acidified Brine**
- Chlorine Dioxide**
- Chlorine Dioxide in chilled H<sub>2</sub>O**
- Sulfur Dioxide**



## Prince P-72 Styrene Copolymer Pipe Dimensions Schedule 40, 80, 120

### Large Diameter Pipe Up To 36"

Large diameter pipe up to 36" is available, subject to a minimum extrusion run. Design criteria available upon inquiry.

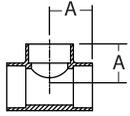
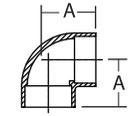
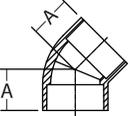
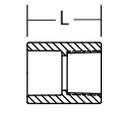
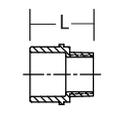
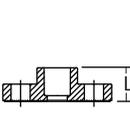
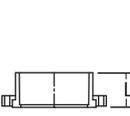
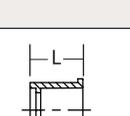
Large diameter pipe is mainly used for the carriage of low pressure gas or liquids.

Pipe IPS	Schedule	O.D.	I.D.	Nominal Wall	Minimum Lbs./Ft	WEIGHT Part #
1/2"	40	0.840	0.608	0.109	.129	P72P-00500-04
3/4"	40	1.050	0.810	0.113	.172	P72P-00750-04
1"	40	1.315	1.033	0.133	.253	P72P-01000-04
1-1/2"	40	1.900	1.592	0.145	.408	P72P-01500-04
2"	40	2.375	2.049	0.154	.548	P72P-02000-04
2-1/2"	40	2.875	2.445	0.203	.864	P72P-02500-04
3"	40	3.500	3.042	0.216	1.264	P72P-03000-04
4"	40	4.500	3.998	0.237	1.610	P72P-04000-04
5"	40	5.563	5.017	.257	2.187	P72P-05000-04
6"	40	6.625	6.031	0.280	2.847	P72P-06000-04
8"	40	8.625	7.943	0.322	4.276	P72P-08000-04
10"	40	10.750	9.976	0.365	6.060	P72P-10000-04
12"	40	12.750	11.890	0.406	7.903	P72P-12000-04
14"	40	14.000	13.072	.437	9.025	P72P-14000-04
16"	40	16.000	14.940	.500	11.910	P72P-16000-04
18"	40	18.000	16.876	.562	14.700	P72P-18000-04
1/2"	80	0.840	.528	.147	.161	P72P-00500-08
3/4"	80	1.050	.724	.154	.216	P72P-00750-08
1"	80	1.315	.935	.179	.322	P72P-01000-08
1-1/2"	80	1.900	1.476	.200	.540	P72P-01500-08
2"	80	2.375	1.913	.218	.781	P72P-02000-08
2-1/2"	80	2.875	2.289	.276	1.141	P72P-02500-08
3"	80	3.500	2.864	.300	1.862	P72P-03000-08
4"	80	4.500	3.786	.337	2.235	P72P-04000-08
5"	80	5.563	4.767	.375	3.166	P72P-05000-08
6"	80	6.625	5.709	.432	4.267	P72P-06000-08
8"	80	8.625	7.565	.500	6.478	P72P-08000-08
10"	80	10.750	9.492	.593	9.610	P72P-10000-08
12"	80	12.750	11.294	.687	13.202	P72P-12000-08
14"	80	14.000	12.500	.750	15.000	P72P-14000-08
16"	80	16.000	14.314	.843	19.430	P72P-16000-08
18"	80	18.000	16.126	.937	24.430	P72P-18000-08
1"	120	1.315	.915	.200	.330	P72P-01000-12
1-1/2"	120	1.900	1.450	.225	.592	P72P-01500-12
2"	120	2.375	1.815	.250	.863	P72P-02000-12
2-1/2"	120	2.875	2.275	.300	1.239	P72P-02500-12
3"	120	3.500	2.800	.350	1.730	P72P-03000-12
4"	120	4.500	3.624	.438	2.996	P72P-04000-12
5"	120	5.563	4.563	.500	4.269	P72P-05000-12
6"	120	6.625	5.501	.562	5.703	P72P-06000-12
8"	120	8.625	7.189	.718	9.487	P72P-08000-12
10"	120	10.750	9.064	.843	13.434	P72P-10000-12
12"	120	12.750	10.750	1.000	19.695	P72P-12000-12

1/4" and 3/8" Sizes Available Upon Request



# Prince P-72 Schedule 80 Pressure Rated Fittings

Fitting		Size Inch	1/2"	3/4"	1"	1-1/2"	2"	3"	4"	5"	6"	8"
Tee		Type	S x S x S	S x S x S	S x S x S	S x S x S	S x S x S	S x S x S	S x S x S		S x S x S	S x S x S
	P72F-01	Dim. A	1-7/16 (36)	1-23/32 (43)	2 (51)	2-9/16 (65)	2-13/16 (71)	3-31/32 (101)	4-23/32 (120)		6-3/4 (171)	8-13/16 (224)
		Part No.	005-08	007-08	010-08	015-08	020-08	030-08	040-08		060-08	080-08
90° Elbow		Type	S x S	S x S	S x S	S x S	S x S	S x S	S x S		S x S	S x S
	P72F-02	Dim. A	1-7/16 (36)	1-5/8 (41)	2 (51)	2-17/32 (64)	2-23/32 (69)	3-31/32 (101)	4-19/32 (116)		6-23/32 (171)	8-27/32 (225)
		Part No.	005-08	007-08	010-08	015-08	020-08	030-08	040-08		060-08	080-08
45° Elbow		Type			S x S	S x S	S x S	S x S	S x S		S x S	S x S
	P72F-17	Dim. A			1-7/16 (37)	1-13/16 (46)	2-1/8 (54)	2-5/8 (67)	3-1/4 (83)		4-3/4 (121)	6 (152)
		Part No.			010-08	015-08	020-08	030-08	040-08		060-08	080-08
Coupling		Type	S x S	S x S	S x S	S x S	S x S	S x S	S x S		S x S	S x S
	P72F-29	Dim. L	1-7/8 (48)	2-5/32 (55)	2-7/16 (62)	2-31/32 (75)	3-1/8 (79)	3-31/32 (101)	4-23/32 (120)		6-9/32 (159)	8-7/16 (214)
		Part No.	005-08	007-08	010-08	015-08	020-08	030-08	040-08		060-08	080-08
Fem. Adapter		Type	S x FPT	S x FPT	S x FPT	S x FPT	S x FPT	S x FPT	S x FPT			
	P72F-35	Dim. L	2 (51)	2-9/32 (58)	2-1/2 (64)	3 (76)	3-3/16 (81)	4-1/32 (102)	4-25/32 (121)			
		Part No.	005-08	075-08	010-08	015-08	020-08	030-08	040-08			
Male Adapter		Type	MPT x S	MPT x S	MPT x S	MPT x S	MPT x S					
	P72F-36	Dim. L	1-23/32 (44)	1-15/16 (49)	2-7/32 (56)	2-1/2 (64)	2-23/32 (69)					
		Part No.	005-08	075-08	010-08	015-08	020-08					
Flange 150#		Type	S	S	S	S	S	S	S	S	S	S
	P72F-59	Dim. L	1-3/32 (27)	1-3/16 (30)	1-3/8 (34)	1-5/8 (41)	1-23/32 (44)	2-9/32 (56)	2-11/16 (68)	3 (76)	3-5/8 (92)	4-13/16 (122)
		Part No.	005-08	007-08	010-08	015-08	020-08	030-08	040-08	050-08	060-08	080-08
Van Stone Flange		Type				S	S	S	S		S	S
	P72F-58	Dim. L				1-17/32 (39)	1-11/16 (43)	2-1/8 (54)	2-15/32 (62)		3-11/32 (85)	4-13/32 (112)
		Part No.				015P72	02P72	03FIBK	04FIBK		06FIBK	08FIBK
		Retainer Ring				P-72	P-72	Fiberloc	Fiberloc		Fiberloc	Fiberloc
Reducing Bushing		Size	1 x 3/4		1-1/2 x 3/4		2 x 1-1/2		4 x 2		6 x 4	
		Dim. L	1-1/4 (32)		1-5/8 (41)		1-5/8 (42)		2-25/32 (71)		3-1/32 (77)	
		Part No.	1 X 07-08		15 X 07-08		2 X 15-08		4 X 2-08		6 X 4-08	
		Size			1-1/2 x 1		3 x 2		4 x 3			
	Dim. L			1-5/8 (41)		2-7/16 (61)		2-25/32 (70)				
	Part No.			15 X 1-08		3 X 2-08		4 X 3-08				
	S x SPGT											
	P72F-38											

**Fitting dimensions are approximate, and intended for piping system layout only.**

1. Dimensions "A" and "L" are written in inches and millimeters.
2. Many schedule 40 fittings available. Inquire.
3. Fabricated and special fittings through 18" are available upon request.

## Double Boss Headers

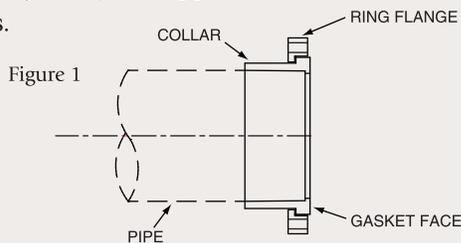
### Internal & External

We have developed two Double Boss Headers for use where threaded connections can easily be installed in the Double Boss, eliminating the problems encountered trying to tap into relatively thin pipe walls. Good header fabrication must provide adequate wall thickness to accept the nipples, fittings, or riser pipes. The extra thickness of the Double Boss makes this possible.



## P-72 Collars with Ring Flanges

When ease of bolt hole alignment is required, moveable ring flanges may be supplied in lieu of fixed, socket type flanges.



The Collar (Figure 1) is permanently solvent welded to the pipe after the loose ring flange is placed over the pipe. A ring type (O.D. - I.D.) gasket is used on the collar face.

Ring flanges can be drilled to either the 150# ANSI or DIN standards.

Molded Collar sizes available: 1-1/2", 2", 3", 4", 6".

Custom sizes can be machined.

This flange system is available on special order. Pricing and delivery upon request.

## Prince P-72 Styrene Copolymer Sheet

Part No.	Thickness	Full Sheet Size
P72S-0125-4896	1/8"	48" x 96"
P72S-0250-4896	1/4"	48" x 96"
P72S-0375-4896	3/8"	48" x 96"
P72S-0500-4896	1/2"	48" x 96"
P72S-0625-4896	5/8"	48" x 96"
P72S-0750-4896	3/4"	48" x 96"
P72S-1000-4896	1"	48" x 96"
P72S-1500-4848	1-1/2"	48" x 48"
P72S-2000-4848	2"	48" x 48"
P72S-2500-4848	2-1/2"	48" x 48"
P72S-3000-4848	3"	48" x 48"
P72S-4000-2448	4"	24" x 48"

## Prince P-72 Styrene Copolymer Weld Rod

Part No.	Thickness	Coil Size
P72E-0094	3/32"	100'
P72E-0125	1/8"	100'
P72E-0156	5/32"	100'

Note: Above sizing is in English/Imperial dimensions (inch = ") (Feet = ')

## Prince P-72 Styrene Copolymer Solvent Cement and Primer

Part No.	Size
P72C-QT (cement)	Quart
P72P-QT (primer)	Quart

## Estimated Quantities of Prince P-72 Cement\* for Socket Welding Per Quart

Size Fitting	No. of Joints	No. of Couplings	No. of Tees
1/2"	380	190	127
3/4"	240	120	80
1"	200	100	66
1-1/4"	140	70	48
1-1/2"	100	50	33
2"	60	30	20
2-1/2"	50	24	16
3"	40	20	12
4"	32	16	10
5"	24	12	8
6"	12	6	4
8"	6	3	2
10"	4	2	1
12"	2	1	2/3

\*Estimated quantities of Prince P-72 cement can vary due to installation conditions, tolerance variations, and socket depth; consequently, this information should be used as a guide, not a guarantee.

# Design Properties

Table III

P-72 Pipe Socket Ends System Maximum Operating Pressure (PSI) at 73° F (21.0° C)		
Part No.	Schedule 40	Schedule 80
1/2"	324	428
3/4"	269	367
1"	253	340
1-1/4"	191	263
1-1/2"	162	229
2"	177	240
2-1/2"	154	214
3"	132	187
4"	116	169
6"	106	163
8"	93	145
**10"	85	138
**12"	80	135
**14"	78	134
**16"	78	132
**18"	78	130

Most applications for chlor-alkali and chlorate are at low pressures. The data provided for Flanged End Systems and Temperature/Pressure Correction Factors must be fully adhered to. We suggest that higher pressure applications be discussed with our field personnel before proceeding.

## Notes:

- \*\*1. No standard pressure rated fittings available for these sizes. Check with Prince Rubber & Plastics for availability of custom fittings.
- 2. Pressure ratings of threaded pipe must be derated 50% from above Table III (e.g. 1" Sch 80 threaded connections rated at 50% of 340 psi = 170 psi at 73° F).

Table IV

P-72 Temperature Correction Factors		
°C	°F	FACTOR
21.0	70	1.00
26.8	80	.96
32.1	90	.92
38.0	100	.85
43.0	110	.77
46.1	115	.74
49.0	120	.70
51.7	125	.66
54.0	130	.62
60.0	140	.55
65.0	150	.47
71.0	160	.40
76.0	170	.32
83.0	180	.25
93.0	200	.18

To obtain pressures at elevated temperatures, please multiply the above correction factor at desired temperatures by the maximum operating pressure at 73° F as shown on Table III.

Table V

Flanged End System Maximum Operating Pressure PSI		
°C	°F	PSI
38.0	100	150
43.0	110	145
49.0	120	135
54.0	130	125
60.0	140	110
65.0	150	95
71.0	160	75
76.0	170	65
83.0	180	55
88.0	190	48
93.0	200	40

10" and larger sizes - check with factory for pressure rating.

## Important

Maximum pressure for any flanged system is 150 psi unless otherwise noted. At elevated temperatures the pressure capability of the flanged system must be derated as noted above.

Table V cannot supersede the maximum operating pressures of the pipe, per Table III, after applying temperature correction factors, per Table IV.



## Support Spacings — Schedule 40 — P -72 Pipe

TEMP. °F	60	80	100	120	140	160	180	200
°C	15.6	26.8	37.7	49.0	60.0	71.0	83.0	93.0
1/4"	4'	3-3/4'	3-1/2'	3-1/4'	2-3/4'	2-1/2'	2'	1-1/2'
1/2"	4-1/2'	4-1/4'	4'	3-3/4'	3-1/4'	3'	2-1/2'	2'
3/4"	5'	4-3/4'	4-1/2'	4-1/4'	3-3/4'	3-1/4'	2-3/4'	2'
1"	5-1/2'	5-1/4'	4-3/4'	4-1/2'	4'	3-1/2'	3'	2-1/4'
1-1/4"	6'	5-1/2'	5-1/4'	4-3/4'	4-1/4'	3-3/4'	3-1/4'	2-1/4'
1-1/2"	6-1/2'	6'	5-1/2'	5'	4-1/2'	4'	3-1/2'	2-1/2'
2"	7'	6-1/2'	6'	5-1/2'	5'	4-1/4'	3-3/4'	2-3/4'
2-1/2"	7-1/2'	7-1/4'	6-3/4'	6-1/4'	5-1/2'	4-3/4'	4'	3'
3"	7-3/4'	7-1/2'	7'	6-1/2'	6'	5-1/4'	4-1/4'	3-1/4'
4"	8-1/4'	8'	7-1/2'	7'	6-1/4'	5-1/2'	4-3/4'	3-1/2'
6"	8-3/4'	8-1/2'	8'	7-1/2'	6-3/4'	6'	5'	4'
8"	9-1/4'	9'	8-1/2'	8'	7-1/4'	6-1/2'	5-1/2'	4-1/4'
10"	9-3/4'	9-1/2'	9'	8-1/2'	7-3/4'	7'	6'	4-1/2'
12"	10-1/4'	10'	9-1/2'	9'	8-1/4'	7-1/2'	6-1/2'	4-3/4'

## Support Spacings — Schedule 80 — P -72 Pipe

TEMP. °F	60	80	100	120	140	160	180	200
°C	15.6	26.8	37.7	49.0	60.0	71.0	83.0	93.0
1/4"	4'	4'	3-3/4'	3-1/2'	3-1/4'	2-3/4'	2-1/2'	2'
1/2"	5'	4-3/4'	4-1/2'	4-1/4'	3-3/4'	3-1/4'	3'	2-1/4'
3/4"	5-1/2'	5-1/4'	5'	4-3/4'	4-1/4'	3-1/2'	3-1/4'	2-1/2'
1"	6'	5-3/4'	5-1/2'	5'	4-1/2'	4'	3-1/2'	2-3/4'
1-1/4"	6-1/2'	6-1/4'	5-3/4'	5-1/4'	4-3/4'	4-1/4'	3-3/4'	2-3/4'
1-1/2"	6-3/4'	6-1/2'	6'	5-1/2'	5'	4-1/2'	4'	3'
2"	7-1/2'	7'	6-1/2'	6'	5-1/2'	4-3/4'	4-1/4'	3-1/4'
2-1/2"	8-1/4'	7-3/4'	7-1/2'	7'	6-1/4'	5-1/2'	4-1/2'	3-1/2'
3"	9'	8-1/2'	8'	7-1/2'	6-3/4'	5-3/4'	5'	4'
4"	9-3/4'	9-1/4'	8-3/4'	8'	7-1/4'	6-1/4'	5-1/4'	4-1/4'
6"	10-1/4'	9-3/4'	9-1/4'	8-1/2'	7-3/4'	6-3/4'	5-3/4'	4-1/2'
8"	10-3/4'	10-1/4'	9-3/4'	9-1/4'	8-1/2'	7-1/2'	6-1/2'	5-1/4'
10"	11-1/4'	10-3/4'	10-1/4'	9-1/2'	8-3/4'	7-3/4'	6-3/4'	6'
12"	11-3/4'	11-1/4'	10-3/4'	10'	9-1/4'	8-1/4'	7-1/4'	6-1/2'

The above data is based on fluids with a specific gravity of 1.0. For heavier fluids, the support spacing from the charts should be multiplied by the following correction factor:

Sp Gr	Correction Factor
1.0	1.00
1.1	0.98
1.2	0.96
1.4	0.93
1.6	0.90
2.0	0.85
2.5	0.80

For support spacing at higher temperatures than listed, please consult your Prince Rubber & Plastic's technical field representative.





# Installation of P-72

## Procedures:

### 1. Cutting:

P-72 thermoplastic pipe can be cut with hand tools such as a hacksaw or power reciprocating saw. A stationary band saw is preferred. Blades should have 6-10 teeth per inch. Pipe must be handled carefully to avoid nicks and scratches to the outside surface. Where possible, wrap the pipe with canvas or other suitable material in the area where pipe is being held for cutting, do not overly clamp pipe. Cuts should be square and smooth. Bevel the outside end of the pipe approximately 1/8" (3mm) x 15° with a file, small hand disk sander or similar tool. Deburr inside edge using a deburring tool.

### 2. Threading:

Threading of Sch. 80 or 120 pipe only is recommended. Sch. 40 pipe is not recommended for threading. Pressure ratings of threaded pipe are derated by 50% from the plain end pressure rating due to thread depth.

### 3. Solvent Welded Joints:

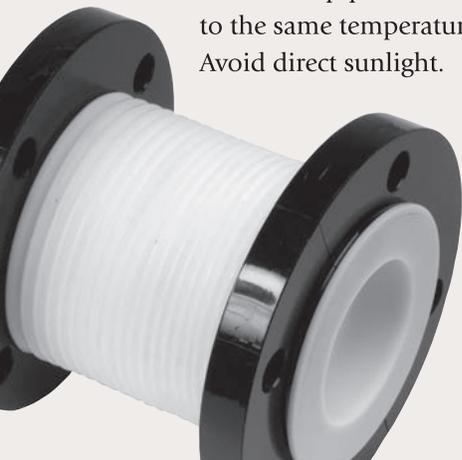
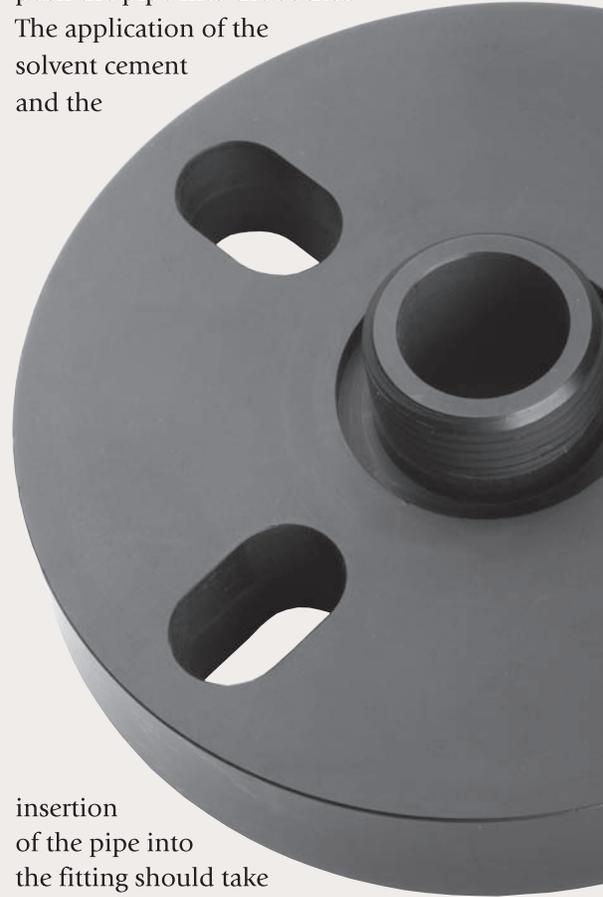
- A. Cut and Bevel pipe per Procedure 1 above.
- B. Condition pipe and fittings to the same temperature. Avoid direct sunlight.

- C. Check dry fit of pipe and fitting after wiping with a clean, dry, lint-free cloth. Pipe should enter fitting about 1/3 to 2/3 depth without resistance.
- D. Mark the depth of the socket on the pipe end to be joined.
- E. Primer: Some users and fabricators prefer the use of a primer; this is generally due to applications involving higher temperatures and pressures. Where a primer is desired, the following procedure applies. Apply primer (see primer note) to the socket fitting until the surface softens. Use a natural bristle brush half the pipe size. The purpose of the primer is to dissolve and penetrate the surface of the socket and pipe. Repeated applications may be necessary. Then immediately do the same to the end of the pipe to the mark that denotes the depth of the socket, again apply the primer to the socket of the fitting.
- F. Using a clean brush, apply a liberal coat of P-72 solvent cement to the pipe end over the primed area, making certain the end is completely covered. Then do the same to the socket of the fitting, using a circular motion, finishing with straight outward brush strokes to prevent excessive cement in the socket. For larger sizes, 4" (100mm) and above, two persons are required to work simultaneously on the pipe and fitting to make sure of a fast connection.

While both surfaces are still wet, insert the pipe into the socket while turning the pipe 1/4 turn. Make certain that the pipe reaches the bottom of the socket. For 4" (100mm) and larger pipe, two or more persons may be required to push the pipe into the socket. The application of the solvent cement and the

insertion of the pipe into the fitting should take approximately one minute for pipe up to 4" (100mm) in diameter and up to two minutes for larger pipe diameters.

Hold the joint together for approximately 30 seconds (longer for larger size pipe) until the pipe is firmly set in the socket bottom. Remove any excess cement on the outside of pipe and fitting. Where accessible, inside of pipe and fitting must be wiped clean. Allow the joint to cure and become completely set before handling for installation.





#### 4. Pipe Supports:

It is important to follow the pipe support spacing guidelines given. This will prevent sagging of the pipe. Pipe supports should be equal in length (minimum) to the diameter of the pipe, and should form at least a 120° "saddle." Avoid point loads. Saddles should be smooth and lined with rubber if necessary to prevent any scratching or nicking of the pipe exterior. P-72 pipe must be allowed to move longitudinally and circumferentially, and therefore cannot be clamped down tight. If it is necessary to completely clamp P-72 pipe, a minimum 1/4" (6mm) thick rubber gasket should be placed between the pipe and clamp and minimal tightening force used. Heavy valves and other accessories should be independently supported so as not to place any stresses on the P-72 piping from this weight or operating torques.

#### 5. Expansion/Contraction Systems:

Due to the high thermal expansion and contraction coefficient of all plastic pipe, care must be taken to design a system to accommodate the changes in length of P-72 piping. Expansion loops and/or special anchored expansion joints for plastic pipe should be used. Consult Prince Rubber & Plastics for more detail. Consider that many commercially available expansion joints are not suitable for plastic pipe due to the high forces required to move them. Note that P-72 pipe can expand 4" per 100' per 100° F (100mm per 30.2m per 56° C) temperature rise.

#### 6. Hydrostatic Pressure Testing:

Do not use air or compressed gas to pressure test! It is recommended to wait at least 48 hours up to and including 4" (100mm) pipe after solvent cementing, and 72 hours for 6" (150mm) pipe and larger, before pressure testing. The hydrostatic pressure rating of a piping system must be considered as the pressure rating of the lowest pressure rated component of the system.

#### 7. Welding P-72:

P-72 can be easily rod welded with hot air, and butt-welded with a heated plate welder, producing strong joints. (Special instructions available).

#### 8. Storage and Handling:

All plastic pipe, including P-72 is relatively fragile compared to metal pipe. Do not drop plastic pipe, especially at low temperatures. Store pipe neatly and straight on proper supports, and do not walk on it or pile heavy loads on it. Whenever possible, inside storage is recommended.

**Note:** Primer: Prince Rubber & Plastics Co., Inc. can make available a primer for resale in quart containers. However, if you wish to make up your own primer, the following recipe can be used:

To manufacture a suitable primer, use the following recipe:  
8 parts Methyl Ethyl Ketone (MEK)  
2 parts Tetrahydrofuran (THF)  
Mix thoroughly  
Keep tightly covered in metal container when not in use.

**Caution:** Carefully follow manufacturer's guidelines in handling these products. (Refer to Manufacturer's Material Safety Data Sheets).

## P-72 Pipe and Fittings with FRP Overwrap

It is sometimes desirable to overwrap P-72 pipe and fittings with FRP (Fiberglass Reinforced Plastic) for:

- Increased durability and structural strength.
- Higher-pressure ratings than unsupported P-72 can achieve.
- Reinforcing large bore pipe and fittings when using a P-72 liner.
- Reinforcing piping systems that may be subject to excessive outside forces.
- Reinforcing special outlets.
- Increased support spacing.

P-72 is available with filament wound or hand lay-up FRP reinforcing depending on the application. Usually the P-72 will be considered a "liner" inside the FRP and the FRP will be considered as the structural load bearing part of the "dual laminate." In this case, it is best to use a thin liner of 3/16" or 1/4" thickness P-72 with the FRP to prevent potential cracking at welds or in the P-72 wall due to the difference of coefficient of expansion between P-72 and FRP. Recent data developed has shown that the thin wall liner of P-72, whether extruded or formed from sheet, performs well with either filament wound or hand lay-up FRP overwrap. P-72 is available overwrapped from 2" (50mm) and up in size.

Flanged and solvent cemented FRP reinforced P-72 can be used as a complete piping system. We can assist you with P-72/FRP dual-laminate specifications based on your requirements such as:

- Pressure/Temperature.
- Structural strength.
- Support spacing.
- General engineering detail.

*Consult your technical representative regarding individual applications. The information in this brochure may be considered as a basis for recommendations, but not as a guarantee. Material should be tested under actual service conditions to determine suitability.*

# Process Pipe "Gasketing"



Panacea™ Gasketing Material	MATERIAL DESCRIPTION	AVAILABLE	DUROMETER	TEMP. RESISTANCE	TENSILE STRENGTH	ASTM-D395 COMPRESSION SET
5170A	Specially compounded pure gum with antioxidants	1/8", 3/16", 1/4" sheet, hose, and custom tube	40 shore A	200° F 93° C	2700 PSI	35%
6962	Special high polymer content blend of Ethylene Propylene with peroxide cure	1/16", 1/8", 3/16", 1/4" thick sheet and hose	60 shore A	300° F 150° C	1800 PSI	25%
TYGON® PP-340 R-3400	Special plasticized vinyl for chlorine dioxide	1/16", 1/8", 3/16", 1/4" in sheet 1/8", 3/16" sheets and tubing available	75 shore A	200° F 93° C	2325 PSI	47%
PP-363	Special plasticized vinyl for hydrogen peroxide	1/16", 1/8", 3/16", 1/4" in sheet and tubing	50 shore A	180° F 82° C	1580 PSI	45%
1375-B	Viton fluoroelastomer	1/16", 1/8", 3/16", 1/4" sheet	75 shore A	300° F 150° C	2070 PSI	15%
1475- TFE-P	Tetrafluor ethylene-propylene copolymer	1/16", 1/8", 3/16", 1/4" sheet	75 shore A	400° F 204° C	2400 PSI	45%
PTG- WHITE	Bead reinforced PTFE	1/16", 1/8" thick sheet	53 shore D	-300° F to 500° F -184° C to 260° C	2200 PSI	54%
PT-101	Expanded PTFE	Molded gasket to 12" 1/16", 1/8" sheet Joint sealant to 2"	N/A	-400°F to 600° F -240° C to 315° C	1630 PSI	92%

Prince Rubber & Plastics Co. has had, for the last 30 years, a continuous program of development for corrosion resistant gasketing directed at the heavy chemical and bleach processing industries.

Too often the choice for gasketing is left until last and sometimes, due to time constraints, poor choices are made.

We can offer a wide choice of gasketing, ranging from the less expensive elastomers to the highly expensive Fluoro Compounds.

Our background and experience in the chemical industry provides us the ability to recommend the best gasketing material for your specific application, and we can provide the reference to prove it. Note the Prince Panacea Gasketing and Physical properties chart above.

*Let us demonstrate our ability!*





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*Contact our World Headquarters for your Closest Area Representative*

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