

**ASAHI/AMERICA**

**Industrial  
Thermoplastic  
Piping Systems**

**for Harsh  
Environments**

**and Highly  
Corrosive  
Fluids**

**Purac™**  
**Proline®**  
**Ultra Proline®**  
**Provent™**



## THERMOPLASTIC INDUSTRIAL PIPING SYSTEMS

Asahi/America thermoplastic piping systems are designed for tough industrial applications. With our partner Agru of Austria, Asahi/America offers single wall pipe systems in polypropylene, PVDF and E-CTFE (Halar®). With over 25 years of experience in thermoplastic pipe, valves and fittings, Asahi/America can offer more experience and know-how than any other company. When considering thermoplastic piping, go with the experts at Asahi/America.



### MATERIALS

#### Polypropylene

Polypropylene (PP) is a member of the polyolefin family; PP is one of the lightest plastics known. It possesses excellent chemical resistance to many acids, alkalis and organic solvents. PP is one of the best materials to use for systems exposed to varying PH levels, as many plastics do not handle both acids and bases as well. It is not recommended for use with hydrocarbons and aromatics. Its upper temperature limit is 195° (90° C).

#### PVDF

Polyvinylidene fluoride (PVDF) is a high molecular weight fluorocarbon and has superior abrasion resistance, dielectric properties and mechanical strength. These characteristics are maintained over a temperature range of -40° F (-40° C) to 250° F (121° C), with a limited usage range extended to 302° F (178° C). PVDF is highly resistant to wet or dry chlorine, bromine and other halogens, most strong acids, aliphatics, aromatics, alcohols and chlorinated solvents.

#### Halar® E-CTFE

Ethylene Tetrafluoroethylene (E-CTFE) is commonly known by its trade name HALAR. E-CTFE is essentially a 1:1 alternating copolymer of ethylene and CTFE (chlorotrifluoroethylene). It contains about 80% CTFE, one of the most chemically resistant building blocks that can be used to make a polymer. It is most likely the best material for handling high concentrations of sodium hypochlorite. Additionally, E-CTFE has good electrical properties and a broad-use temperature range from cryogenic to 300° F (150° C).

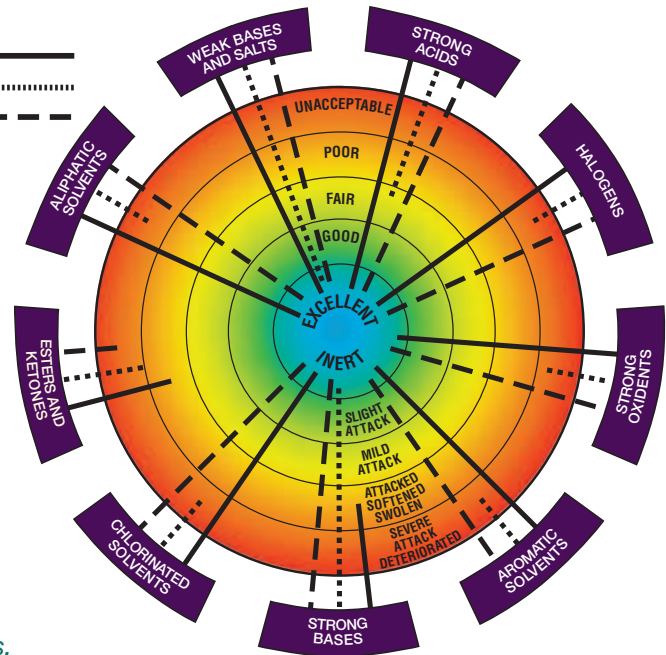


An installation of automated and manual Proline valves and piping.

### CHEMICAL RESISTANCE

- KEY**
- PURAD (PVDF) —————
  - PROLINE (POLYPROPYLENE) ·········
  - ULTRA PROLINE (HALAR™) - - - - -

Consult Asahi/America's engineering department for an exact recommendation for chemical resistance.



A high purity application of Purad pipe, valves, and fittings.

## SYSTEMS

### Proline™ (PP)



- The **PRO 150** system is rated at 150 psi at 68° F for pressurized systems.
- PRO 150 is available from 3/8" (16mm) to 48" (1200mm).
- PRO 150 can be joined using butt, socket or electrofusion fittings.
- The **PRO 45** system is rated at 45 psi at 68° F.
- PRO 45 is available in both pressure and drainage pattern fittings.
- PRO45 is available from 4" (110mm) up to 55" (1400mm).
- PRO 45 is joined via butt fusion.

### Ultra Proline® (E-CTFE)



- Ultra Proline is ideally suited for the harshest chemical applications.
- Ultra Proline is an ideal substitute for Rigid PFA pipe.
- Ultra Proline is available 1", 1-1/2", 2", 3", and 4".
- The E-CTFE material is the ideal material for transporting sodium hypochlorite.

### Purad™ (PVDF)



- Purad, produced by Agru/Austria, is available from 1/2" (20mm) to 12" (315mm).
- Purad is available in 150 and 230 psi ratings.
- Purad is available in High Purity Grade and General Grade.
- High Purity Pipe and Fittings are Class 100 clean room produced.
- High Purity Fittings and valves are HOT DI rinsed for over one hour.
- Purad is available in IR, HPF, butt and socket fusion methods.








### ProVent™ (PP)















- Provent is available from 4" (110mm) to 55" (1400mm).
- ProVent is available with blast gate and butterfly valves.
- Specialty sprinkler head mounting pads are available in all sizes.
- ProVent can be assembled using butt fusion, hot gas or extrusion welding depending on the diameter.

## PIPING SYSTEMS' DIMENSIONS

Provent	Ultra Proline	Purad PVDF 150	Purad PVDF 230	Proline 45	Proline 150	SIZES
						INCHES
						MM
						1/2 20
						3/4 25
						1 32
						1-1/4 40
						1-1/2 50
						2 63
						2-1/2 75
						3 90
						4 110
						6 160
						8 200
						9 225
						10 250
						12 315
						14 355
						16 400
						18 450
						20 500
						24 630
						Larger
Other sizes are available upon request.						

BUTT FUSION FITTINGS		PROLINE	ULTRA PROLINE	PURAD	PROVENT
	<b>Reducing Tees</b>	3x2 – 10x6: Pro 150	Fabricated in all sizes	Available in all sizes; molded, fabricated, and machined	Fabricated in all sizes
	<b>Reducers</b> (Extended Leg and Concentric Reducer shown)	Extended Leg: available in 8x6 and 3/4 x 1/2 Pro 150 Concentric Reducer: 24x18 to 4x2 Pro 45 Eccentric: 8x6 to 3/4 x 1/2 Pro 150	Available in all sizes; multiple configurations	Available in all sizes; multiple configurations	Reducers available in all sizes; Reducing Lateral: available up to 20"; Lateral: 4" – 24" molded and/or segmented
	<b>End Caps</b> (Molded end shown)	1/2" – 20": Pro 150 4" – 20": Pro 45	1" – 4" machined	1/2" – 4" molded 6" – 12" machined	4" – 54" ANSI
	<b>Male Threads</b>	1/2" – 2": Pro 150	1" – 2" machined	1/2" – 2" molded	Use Pro 150 as required.
	<b>Female Threads</b>	1/2" – 2": Pro 150	1" – 2" machined	1/2" – 2" molded	Use Pro 150 as required.
	<b>Unions</b>	1/2" – 2": Pro 150	None	1/2" – 2" molded	Does not apply.
	<b>Electrofusion Couplings</b>	1/2" – 9": Pro 150	None	1/2" – 2" HPF	Does not apply.

SPECIALTY COMPONENTS		(Available for Proline and Purad. For UltraProline and Provent consult factory.)			
					
T-Valves	Instrumentation Fittings	Probe Adapters	Restraint Fittings	Sanitary Ends	Pipe-to-Flare Transition Fittings

PROLINE	ULTRA PROLINE	PURAD	PROVENT	BUTT FUSION FITTINGS	
1/2" – 20": Pro 150 4" – 20": Pro 45 Segmented available in larger sizes	1" – 4"	1/2" – 12"	4" – 54" molded and/or segmented  <b>60° Elbow:</b> 4" – 54": segmented	90° Elbows	
1/2" – 12": Pro 150 4" – 12": Pro 45 Segmented available in larger sizes	1" – 2" molded	1/2" – 6" molded 8" – 12" segmented	4" – 54" molded and/or segmented  <b>30° Elbow:</b> 4" – 54": segmented	45° Elbows	
1/2" – 12" molded	None	1/2" – 2" molded	Does not apply	Extended Leg 90° Elbows	
1/2" – 20": Pro 150 4" – 20": Pro 45	1" – 4" molded	1/2" – 12" molded	4" – 54" molded and/or segmented	Tees	
1/2" – 1": Pro 150 Available to 12" Molded on request	None	1/2" – 1" molded	Does not apply	Extended Leg Tees	
Stub Ends 1/2" – 20": Pro 150 4" – 24": Pro 45 Backing Rings 1/2" – 12": PPG 2" – 24": Ductile	Stub Ends 1" – 4" molded Backing Rings 1" – 4": PPG	Stub Ends 1/2" – 12" molded Backing Rings 1/2" – 12": PPG 2" – 24": Ductile Iron	Stub Ends 4" – 54" ANSI Backing Rings 4" – 12": PPG 4" – 24": Ductile Iron <i>Also available as a Slip Flange (PS 1569)</i>	Stub Ends and Backing Rings	 (Stub End shown without Backing Ring)

PROLINE (PP)	ULTRA PROLINE (ECTFE)	PURAD (PVDF)	PROVENT (PP)	SPECIFICATIONS
Pro 150: SDR 11 150 psi rated at 70°F Pro 45: SDR 33 45 psi rated at 70°F Pro 90: SDR 17.3 90 psi rated at 70°F	SDR 21 See pressure rating tables in the <i>Asahi/America Design Guide</i>	1/2" – 10": SDR 21 230 psi rated at 70°F 3" – 12": SDR 33 150 psi rated at 70°F	Pro 45: SDR 33 45 psi rated at 70° F Pro 30: SDR 41 30 psi rated at 70° F Vent Grade: 16" – 54"	Standard Ratings
Pro 150: 1/2" – 20" Pro 45: 4" – 48"	1/2" – 4" Larger upon request	PVDF 230: 1/2"–2 1/2" Standard 3" – 10" Optional PVDF 150: 4" – 12" Larger upon request	SDR 33: 4" – 48" SDR 41: 4" – 54" Vent: 16" – 54"	Pipe Dimensions
Butt Fusion: 1/2" – 48" Socket Fusion: 1/2" – 4" Electrofusion: 1/2" – 9" IR Fusion: 1/2" – 10"	Butt Fusion: 1/2" – 4" IR Fusion: 1/2" – 4"	Butt Fusion: 1/2" – 12" Socket Fusion: 1/2" – 4" HPF: 1/2" – 2" IR Fusion: 1/2" – 10"	Butt Fusion Hot Gas and Extrusion Welding	Joining Techniques

SOCKET FITTINGS	PROLINE	PURAD*	SOCKET FITTINGS	PROLINE	PURAD*
90° Elbows	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"	Unions	Pro 150: 1/2" – 2"	PVDF 150: 1/2"– 2"
45° Elbows	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"	Couplings	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"
Tees	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"	Female Adapters	Pro 150: 1/2" – 2"	PVDF 230: 1/2"– 2"
Stub Ends	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"	Caps	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"
Reducers	Pro 150: 1/2" – 4"	PVDF 230: 1/2"– 4"	Backing Rings	1/2" – 12" PPG 2" – 24" Ductile Iron	1/2" – 12" PPG 2" – 24" Ductile Iron
Reducing Tees	Pro 150: 1/2" – 2"	Does not apply	Male Adapters	Use Butt with Socket Coupling	Use Butt with Socket Coupling

DRAINAGE PATTERN FITTINGS	PROLINE	ULTRA PROLINE	PVDF (General Grade)
Laterals	1 1/2" – 16": Pro 150 4" – 16": Pro 45 Fabricated	Available Upon Request Consult Factory	1 1/2" – 12" Fabricated
Laterals with 1/8th Bend	1 1/2" – 16": Pro 150 4" – 16": Pro 45 Fabricated	Available Upon Request Consult Factory	1 1/2" – 12" Fabricated
Sanitary Tee	1 1/2" – 16": Pro 150 4" – 16": Pro 45 Fabricated	Available Upon Request Consult Factory	1 1/2" – 12" Fabricated
Clean Out	1 1/2" – 16": Pro 150 4" – 16": Pro 45 Fabricated	Available Upon Request Consult Factory	1 1/2" – 12" Fabricated
P Trap	1 1/2" – 16": Pro 150 4" – 16": Pro 45 Fabricated	Available Upon Request Consult Factory	1 1/2" – 12" Fabricated

\*Use SDR 21 pipe when socket welding PVDF. Socket fittings available in General Grade PVDF only.

VALVES			
PROLINE	ULTRA PROLINE	PURAD	PROVENT
Type 21 Ball Valve: 1/2"-4" Type 342 Diaphragm Valve: 1/2"-4" Type 342 Flanged Diaphragm Valve: 2 1/2" – 4" Type 14 Flanged Diaphragm Valve: 1/2" – 4" Type 14 True Union Diaphragm Valve: 1/2" – 2" Type 15 Diaphragm Valve: 6" Type G Diaphragm Valve: 8"-10" Ball Check Valve: 1/2" – 4" Swing Check Valve: 1/2" – 8" Needle Valve: 1/4" and 1/2"	Type 342 Spigot Diaphragm Valve: 1/2" – 2" (on request)	Type 21 Ball Valve: 1/2"-4" Type 342 Diaphragm: 1/2"-4" Type 342 Flanged Diaphragm Valve: 2 1/2" – 4" Type 14 Flanged Diaphragm Valve: 1/2" – 4" Type 14 True Union Diaphragm Valve: 1/2" – 2" Type 15 Diaphragm Valve: 6" Type G Diaphragm Valve: 8"-10" Ball Check Valve: 1/2" – 4" Swing Check Valve: 1/2" – 8" Sample Needle Valve: 1/4" & 1/2"	Damper Style: 4" – 54" Blast Gate: 4" – 54"

## ENGINEERING AND SERVICE

### Prefabrication



Asahi/America can make your project run smoother and faster with our prefabrication service. We can provide shop drawings for each spool piece based on system layout prints. Then, we can fabricate, test (on request), package, and ship each spool directly to the job site. You can also request us to build specialized components like sparger tubes, bubblers, etc.

### The "Buddy System."



*Asahi/America's expert field technicians provide weld training and certification.*

From project inception and design to final testing and on-site installation training or supervision, "The Buddy System" is available to assist on the whole process. A pipe system is more than components: it includes pipe and fittings as well as valves, connection points, restraints, hangers, installation equipment, and training. Putting them all together to provide a reliable, long lasting system is what the Buddy System is all about.

## JOINING SYSTEMS

Piping systems are joined using heat fusion. Polypropylene and PVDF can be joined using both butt and socket fusion, while Halar is only available for butt fusion. All materials can be joined using IR non-contact butt fusion. We also provide other methods such as beadless fusion and electrofusion. Equipment is available in all sizes and configurations. Consult our *Engineering Design Guide* or our engineering department for specific equipment recommendations.

### Hand Socket Welder



*Socket fusion tool welds 1/2"-2" pipe. Unit holds 2 sets of heater inserts.*

### Shop 4 Miniplast



*Most compact butt fusion tool available for 1/2"-4" straight or mitred welds.*

### Polymatic Welder



*Electrofusion tool for welding PP and HDPE pipe and fittings. Couplings available for Pro 150 system, sizes 1/2"-9".*

### Trench Equipment



*Many models of this hydraulic butt fusion tool for field/trench welding are available.*

### W3500 Bench Socket 4



*For socket fusion welding of components from 1/2"-4". Selectable socket depth inserts.*

### W2500 Shop 12



*Bench-style butt fusion tool for 1 1/2"-12" PP and PVDF welding.*

### Shop 110



*Latest IR, non-contact fusion tool for sizes 1/2"-4". The unit has a touch screen and features automatic operation.*