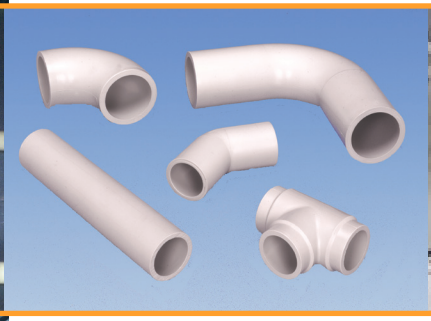
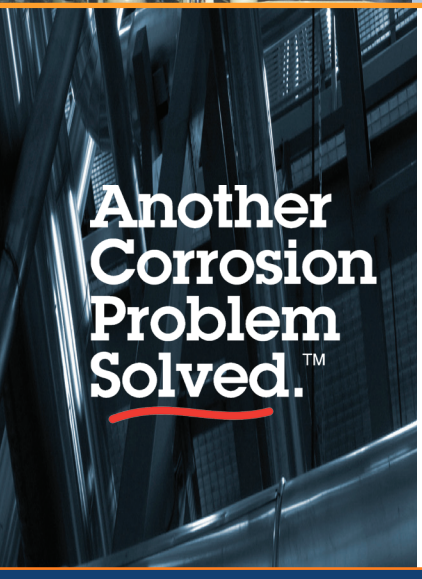
Industrial Piping Systems



Proline® • Ultra Proline® • Super Proline® • Chem Proline®
ProVent® • Welding Equipment



ASAHI/AMERICA

www.asahi-america.com

Industrial Water and Chemical Transport Solutions

Asahi/America pioneered the market for thermoplastic valves in the United States and Latin America, during a time when there was no viable alternative to metal for piping systems.

Headquartered in Malden, Massachusetts (north of Boston) where we operate a 100,000 square foot manufacturing and warehouse facility, Asahi/America offers thermoplastic piping systems designed and engineered for tough industrial applications. With our partner, AGRU of Austria, Asahi/America offers single wall piping systems in polyethylene, polypropylene, PVDF, and Halar® (E-CTFE).

Asahi/America supports all of our products with a comprehensive selection of in-depth technical documents and product catalogs. To access any of Asahi/America's technical documentation, testing information, or product catalogs, visit the company's web site at www.asahi-america.com.

Proline® Industrial Piping System Overview

Asahi/America's Proline® thermoplastic piping systems offer many options for handling your specific industrial piping application. We provide polyethylene (PE), polypropylene (PP), polyvinylidene fluoride (PVDF) and ethylene chlorotrifluoroethylene (E-CTFE/Halar®) industrial piping systems and components.

Industrial piping systems feature a unique set of challenges compared to residential or commercial piping systems. Industrial requirements are more demanding due to the critical nature of the system. Chemical media, temperature and pressure all are vital factors when selecting an industrial piping system.

What makes up an industrial piping system?

An industrial piping system provides the owner a safe and reliable long-term solution for the chemical process requirements at the lowest possible cost of ownership.

Cost of Ownership:

There are several factors that go into the cost of ownership. Real costs, like the cost of material and of labor to install are certainly a big portion of it, but perhaps not the most important factors. Ideally, there would be a life cycle during which the system can be reasonably expected to provide trouble-free service. This life cycle of a system is how the cost of ownership should be calculated.

Asahi/America's Proline® industrial piping systems are designed to provide the lowest cost of ownership.

Many factors should be considered when determining the ultimate cost of an industrial piping system.

- Material
- Installation
- System maintenance
- Potential costs as a result of system failure including fines, clean up, system down time
- Disposal of old failed system

Asahi/America's family of Proline® pipe have been installed in a wide array of industrial applications for over four decades. Our installation procedures and system maintenance guidelines are designed for optimum system efficiency and cost management.

By minimizing the potential additional costs associated with installing the improper system or mismanaging the installed system, Asahi/America is poised to help you keep your ultimate cost of ownership down.

Industrial Piping System Overview

Worldwide Competence in Plastics

Asahi/America Proline® Engineered Piping System

Proline® piping systems are manufactured in Austria by AGRU. AGRU is recognized world-wide as a leading manufacturer of thermoplastic piping systems of PE, PP, PVDF, and E-CTFE materials. The design that goes into every piping system comes from over 50 years of experience in thermoplastic molding and extruding technology. These piping systems adhere to DIN specifications.

Expected Useful Life:

With DIN specifications, industrial piping systems made of thermoplastic materials like PE, PP, PVDF and E-CTFE are designed and manufactured with an expected useful life of a minimum of 50 years. A Pro150 PP 150 psi rated piping system with a built-in minimum safety factor will handle safe media (like water) at ambient temperature for a minimum of 50 years without failure at 150 psi constant service. If the application is chemical service, an additional safety factor is considered and the life expectancy is usually less than 50 years.

Joining Integrity:

All Proline® piping systems use fusion welding joining technology. Fusion joining technologies are the most integrous thermoplastic joining methods known. Fusion is the only joining method that results in a 100 percent homogeneous bonding the two molten surfaces. The joined surfaces become one without the introduction of any foreign material and results in a completely non-mechanical joint. Joint integrity is essential in providing a true industrial piping system because the weakest parts of all piping systems are the joints and connections. Of all the various methods of joining plastic pipe, threading, flanging, cementing, hot air welding or fusion, fusion is the only method that is non-mechanical and produces a joint as strong as the pipe itself. Fusion joining is the recommend joining method because it is both repeatable and reliable.

Pressure Rating:

All Proline® piping systems are pressure rated based on a standard dimensional ratio (SDR). SDR is the ratio between the OD of the pipe and the wall thickness (OD÷WALL). As an example, Pro150 PP piping system is an SDR 11 system. Every pipe, fitting and valve in the system in every size is made with an SDR of 11.
For PP, an SDR 11 equates to a 150 psi system at ambient temperature (with a built-in safety factor). Using this SDR 11 throughout the size range means that as you increase in pipe size the wall thickness must also increase. This is what we call an engineered system. An engineer can confidently design a proper piping system to meet the requirements of the process for the desired life cycle.

ASAHI/AMERICA®

Materials

Asahi/America provides our customers thermoplastic piping systems in polyethylene, polypropylene, PVDF, and Halar® materials. We publish an extensive chemical resistance guide to assist the user in selecting the proper piping system for the application, however, the guide cannot possibly cover every application. Accordingly, if there is a new application for which we do not have prior experience, we will provide a free spool piece for trials in the actual service, or samples of our piping system materials for immersion testing. After the trial period is concluded, we will inspect and test the material provided back to us and issue a report on the suitability in the application. Over the years, this method of trial has opened up numerous opportunities for our customers to find better piping system alternatives in handling their difficult and costly requirements.

Polyethylene (PE)

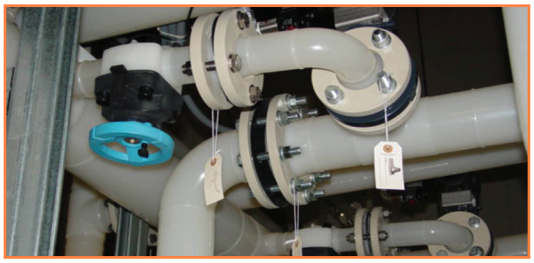
Polyethylene is one of the most common thermoplastic materials. In general, polyethylene's temperature range is 0°F (-18°C) to 140°F (60°C). Polyethylene is easy to install using thermoplastic welding techniques such as socket, butt or electrofusion. It can handle pH from 1-14 and is the most ductile and abrasion resistant thermoplastic material.

Polypropylene (PP)

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, alkalies 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 well. Its upper temperature limit is 195°F (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 range extended to 302°F (178°C). PVDF is highly resistant to bromine and other halogens, most strong acids, aliphatics, alcohols and chlorinated solvents.



Halar® (E-CTFE)

Ethylene chlorotrifluoroethylene (E-CTFE) is commonly known by its trade name Halar®. E-CTFE is a 1:1 alternating copolymer of ethylene and CTFE (chlorotrifluoropethylene). It contains about 80 percent CTFE, one of the most chemically resistant building blocks that can be used to make a polymer. Additionally, E-CTFE has good electrical properties and a broad temperature range from cryogenic to 300°F (150°C).

Chem Proline® - Polyethylene

Chem Proline® is composed of the latest evolution in polyethylene (PE) resin technology. This new PE material possesses excellent physical and mechanical properties. These properties include: stress crack resistance, slow crack growth resistance, ductility, impact resistance, abrasion resistance and brittleness resistance.

Capable of handling some of the harshest chemical applications with a long-term expected useful life, Chem Proline® offers a greater value over metal, FRP, lined steel, or other thermoplastic piping systems like PVC and C-PVC. Chem Proline's® superior properties make it the only polyolefin material able to handle certain chlorinated services like sodium hypochlorite. UV resistant, light weight, proven fusion joining technology, Chem Proline® is perfect for most chemicals found in the water treatment process.

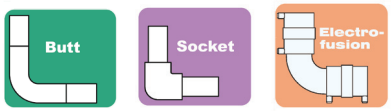
Supply Range

Pipe and Fittings
- 20 - 315mm (1/2" - 12") 150 psi

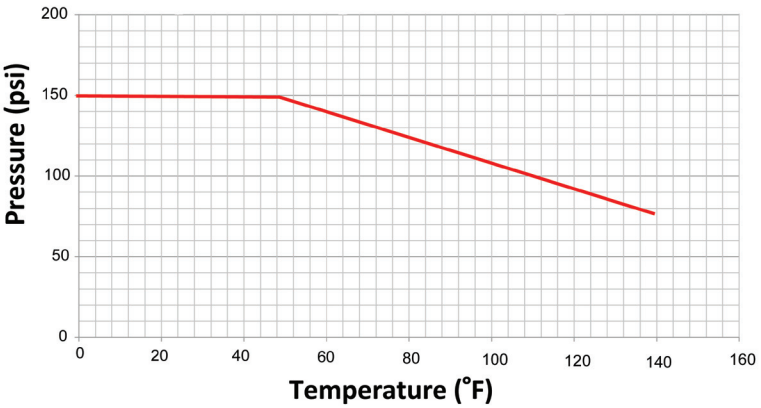
Valves
- Type-21 Ball Valves: 20 - 110mm (1/2" - 4")
- Type-57 Butterfly Valves: 50 - 315mm (1-1/2" - 12")
- Type-14 Diaphragm Valves: 20 - 250mm (1/2" - 10")
- Ball Check Valves: 20 - 110mm (1/2" - 4")
- Regulator Valves, Relief Valves, Calibration Columns, Gauge Guards

Chem Proline® by Asahi/America

Welding Methods



Pressure Rating



Chem Proline® vs other Plastic & Metal Piping Systems

Chem Proline® by Asahi/America is manufactured under special license by AGRU of Austria. Chem Proline® is made from the latest polyethylene resins available, which provide the highest resistance to chemical attack.

Chem Proline® vs PE 4710
- Over 800 pecent more resistant to chemical crack propagation
- 40 times more stress crack resistant
- Requires no special bedding in buried applications
- Able to withstand point loads

Chem Proline® vs FRP Pipe
- Better impact resistance
- Much shorter joint cure times

Chem Proline® vs Metal Pipe
- Fusion joints are the same as the pipe
- Non-metalic, no rust or corrosion

Chem Proline® vs PVC/C-PVC
- No glued or threaded joints
- Much lower brittleness temperature - more ductile
- Greatly reduced install time, short cure times needed

Chem Proline® Ideal Applications

-pH range 1-14
-Bleach
-Process Chemical & Waste
-Caustic
-Acids
-Industrial Water
-Horizontal Directional Drilling

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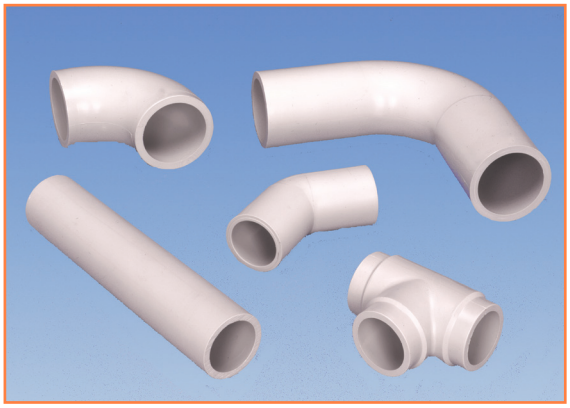
Proline® - Polypropylene (PP)



Proline® piping systems are made from the highest quality copolymer polypropylene resins. Proline® is suitable for a wide range of applications with a pH range from 1 to 14 and at temperatures over 140°F. Proline® copolymer resins exhibit better properties than homopolymer polypropylene. As such, Proline® is the best choice for process waste drains that typically see varying media and temperatures. Proline® uses fusion joining technology with socket, butt and electrofusion available to meet your application requirements.

Asahi/America offers a full range of molded fittings and fabricated specialty drainage fittings such as wyes, P-traps, laterals.

Supply Range

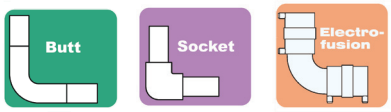
Pipe and Fittings

- 20 - 1200mm (1/2" - 48") SDR 11, 150 psi
- 110 - 1400mm (4" - 55") SDR 33, 45 psi

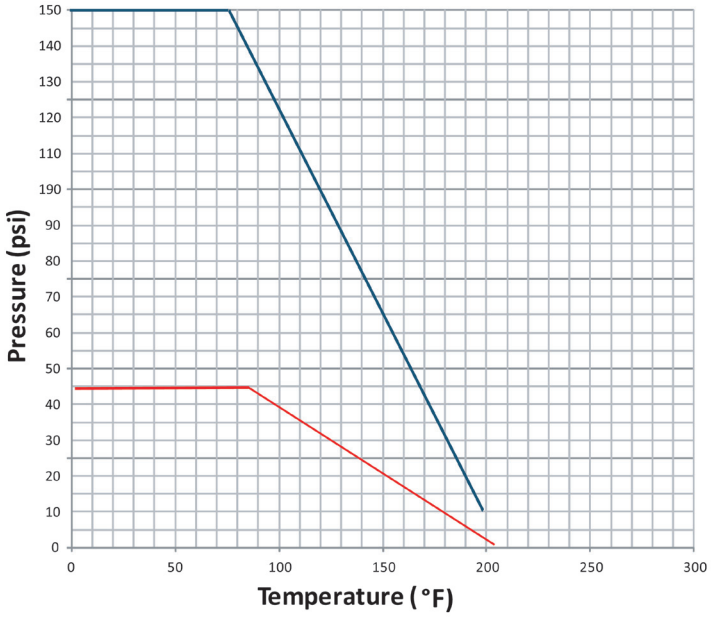
Valves

- Type-21 Ball Valves: 20 - 110mm (1/2" - 4")
- Type-57 Butterfly Valves: 50 - 1400mm (1-1/2" - 55")
- Type-14/15/G Diaphragm Valves: 20 - 200mm (1/2" - 10")
- Ball Check Valves: 20 - 110mm (1/2" - 4")
- Frank Series Regulating Valves: 20 - 110mm (1/2" - 4")

Welding Methods



Pressure Rating

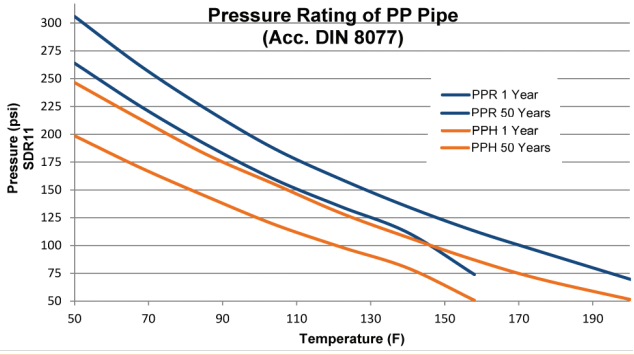


Resins

Asahi/America's Proline® PP utilizes the best materials throughout the entire product size range. Proline® is produced with random copolymer resin 20 - 500mm (1/2" - 20"), SDR 11 pipe and homopolymer resin in sizes greater than 500mm (20"), SDR 17 and 33.

Random copolymer resin exhibits higher weld strength, impact resistance and faster relaxation due to lower modulus of elasticity.

All resins used for Proline® pipe are β nucleated (PP-beta) resin.



Proline® Ideal Applications

-pH range 1-14
-Process Chemical & Waste
-Caustic
-Acids
-Industrial Water

ASAHI/AMERICA®

Super Proline® - PVDF

Super Proline® piping systems are made from the highest quality suspension grade PVDF resin. Super Proline® is suitable for a wide range of applications with pH range from 1-8 and at temperatures up to 120°C. Super Proline® Type II PVDF resins produced by suspension exhibit better properties than Type 1 PVDF produced by the emulsion process. Super Proline® is the best choice for chemical process applications that typically see varying temperatures. Super Proline® uses fusion joining technology with socket, butt and electrofusion available to meet your application's requirements.

Asahi/America offers a full range of molded fittings and fabricated specialty drainage fittings such as wyes, P-traps, laterals, chemical injection quills and regulator valves.

Supply Range

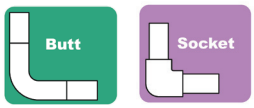
Pipe and Fittings

- 20 - 315mm (1/2" - 12") SDR 21, 230 psi
- 90 - 400mm (3" - 16") SDR 33, 150 psi

Valves

- Type-21 Ball Valves: 20 - 110mm (1/2" - 4")
- Type-57 Butterfly Valves: 50 - 315mm (1-1/2" - 12")
- Type-14 Diaphragm Valves: 20 - 63mm (1/2" - 4")
- Ball Check Valves: 20 - 110mm (1/2" - 4")
- Frank Series Regulating Valves: 20 - 75mm (1/2" - 2-1/2")

Welding Methods



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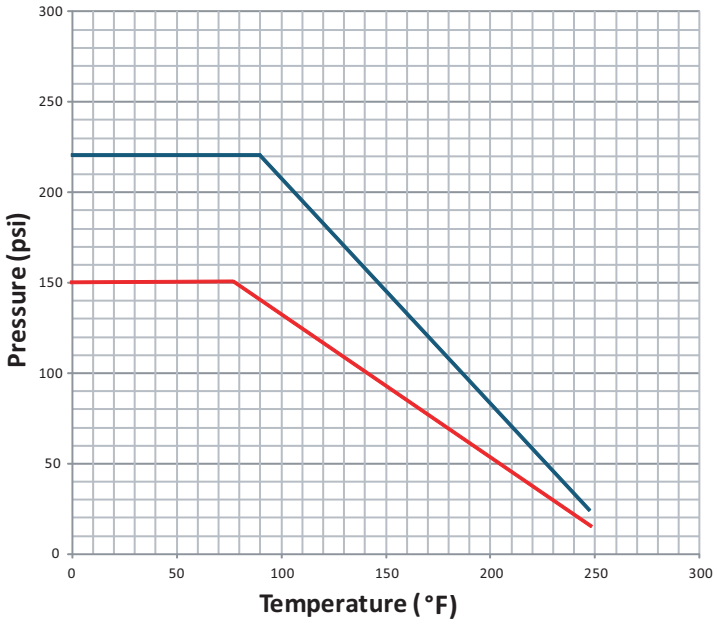
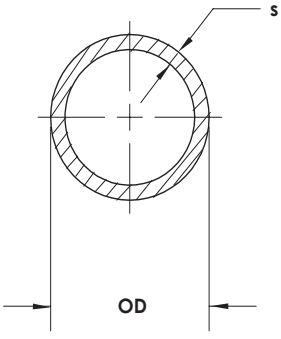


SDR Advantage

Standard dimensional ratio provides consistent pressure rating across the entire size range. Super Proline is offered in two thickness ratios: SDR 33 (150 psi) and SDR 21 (230 psi). Substantial cost savings can be realized by supplying SDR33 material starting at Asahi's industry leading smallest diameter of 90mm. For systems requiring only 150 psi, SDR 33 piping and fittings use an astonishing 35 percent less material than SDR 21.

System components such as instruments and valves typically carry less than 230 psi pressure ratings and therefore savings can be immediately experienced by engineering your system with equal pressure ratings.



$$SDR = \frac{OD}{S}$$

Super Proline® Ideal Applications

-93-98% Sulphuric Acid
-High Temperature Fluid Transfer
-Acids

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Ultra Proline® - Halar® (E-CTFE)

Halar® (E-CTFE) is a thermoplastic melt processable copolymer resin in the fluoropolymer family consisting of ethylene (E) and chlorotrifluoroethylene (CTFE). Because of its excellent chemical and temperature resistance, Halar® piping systems are highly versatile and suitable for the broadest range of applications. Halar® can handle a pH from 1 – 14. Halar® does particularly well where other alternatives like expensive metal materials (titanium, alloy 20, 316/304L SS, etc.) or lined steel are being used with limited results. Halar® is used for high concentrations of acids (like sulfuric acid) and highly oxidative applications like sodium hypochlorite, chlorine gas, ozone, and chlorine dioxide with great success. It is also suitable for solvents and/or high pH applications at elevated temperatures.

Halar® is joined using butt fusion – thermally fused joints have the highest integrity over all other joining methods typically used in industrial piping systems. Halar® is also perfectly suited for high purity applications especially at elevated temperatures.

Supply Range

Pipe and Fittings

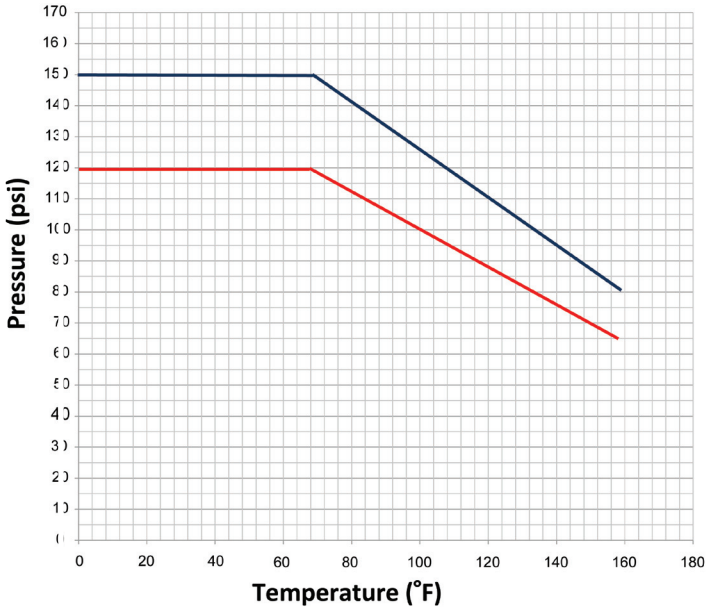
- 20 - 50mm (1/2" - 1-1/2") SDR 21, 150 psi
- 63-110mm (2" - 4") SDR 21, 120 psi

Valves

- Type-21 Ball Valves: 20 - 32mm (1/2" - 1")
- T-342 Diaphragm Valves: 20 - 63mm (1/2" - 2")
- Frank Series Regulating Valves: 20 - 63mm (1/2" - 2")

Welding Methods

Pressure Rating



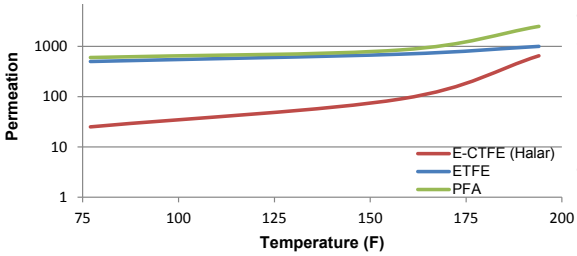
Resins

Asahi/America's Ultra Proline® piping system is manufactured by AGRU of Austria from Solvay's Halar® resin (E-CTFE).

E-CTFE is one of the most chemically resistant plastics available.

Permeation of Cl2

Permeation units are cm^3 x mm/m^2 x bar x day



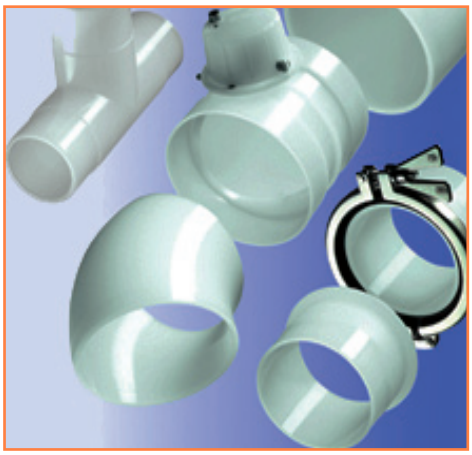
Ultra Proline® provides technical benefits as well as cost savings over traditional PFA systems.

- Less permeable than PFA.

Ultra Proline® Ideal Applications

-High Concentration Sulfuric Acid
-pH 1-14
-Bleach
-Strong Oxidizing Agents (Chlorine, Ozone, Hydrogen Peroxide)

ProVent® - Polypropylene (PP)



ProVent® piping is specifically designed and manufactured for ventilation and exhaust systems that transport corrosive fumes. It is superior in performance to PVC, fiberglass and sheet metal systems due to its chemical resistance, mechanical properties, solid construction, and ease of installation. It is perfect for applications as diverse as water treatment facilities, electroplating shops, semiconductor wet stations, and pharmaceutical processing.

Supply Range

Pipe and Fittings
- 90-1400mm (3" - 54")

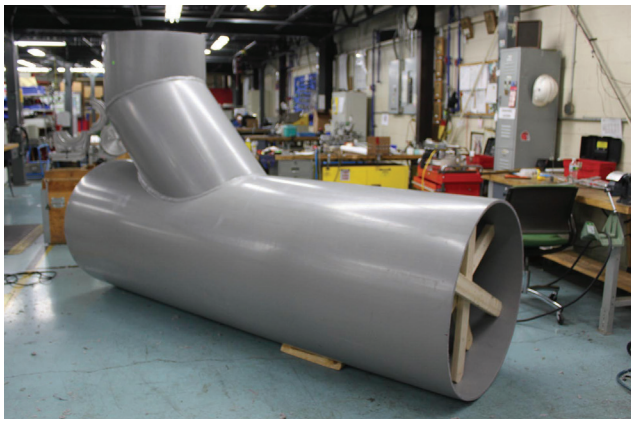
Valves
- Damper Style
- Blast Gate

Options
- PS1569 & ANSI 150# Flanges
- Fans
- Sprinkler Connection Fittings

Welding Methods

Benefits

For ProVent®, a minimum wall thickness of .25" is provided, eliminating the risk of delamination, corrosion or pitting in appropriate applications. The ProVent® operating temperature range is 15°F – 200°F, exceeding that of PVC, which is 32°F –140°F. ProVent® polypropylene is a ductile material that maintains its mechanical properties to 15°F without becoming brittle. This is not true of PVC and fiber-glass. ProVent® pipe also has superior impact strength.



Resins

Polypropylene is one of the lightest plastics, which makes it ideal for large diameter ventilation systems. The PP resins used for ProVent® are available with a flame retardant additive up to 1200mm (48") and with an electrically conductive additive up to 400mm (16").

Electro conductive materials can be ground, to eliminate risk of static discharge while transporting combustible gasses. Sheet materials are also available, which can be formed into pipe or containment to any dimensions.

Self-extinguishing polypro (PPs) carries a UL94 V-2 rating. Electro conductive PP is also self-extinguishing (PPs-el) and carries a UL94 V-0 rating with a surface resistance of less than 10^{13} Ohms compared to 10^{13} Ohms for standard PP.

ProVent® Ideal Applications

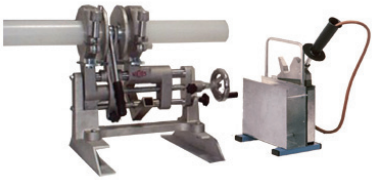
-Pharmaceutical Hood
-Chemical Exhaust
-Light Weight Conduit

ASAHI/AMERICA®

Welding Equipment

Available for Purchase or Rent

Butt Fusion



Miniplast - Most compact butt fusion tool available for 20 - 110mm (1/2” - 4”) straight or mitred welds.

Maxiplast - Butt fusion tool available for 110 - 160mm (4” - 6”) straight or mitred welds.

Shop 12 - Bench-style butt fusion tool for 50 - 315mm (1-1/2” - 12”) PP and PVDF welding.

Socket Fusion

Hand Held Socket 2 - Socket fusion tool welds 20 - 63mm (1/2” - 2”) pipe.

Shop 4 - For socket fusion welding of components from 20 - 110mm (1/2” - 4”).

Electrofusion

Polymatic - Electrofusion tool for welding PP and HDPE couplings available for Proline® and Chem Proline®.

Welding Equipment Selection Chart

Equipment	*Proline® PP*	*Chem Proline® PE*	*Super Proline® PVDF*	*Ultra Proline® E-CTFE*	*ProVent® PP*
Miniplast	X	X	X		
Maxiplast	X	X	X		
Shop 6	X	X	X		
Shop 12	X	X	X		X
Hand Held Socket 2	X	X	X		
Shop 4	X	X	X	X*	
Bench Socket	X	X	X		
Field 6	X	X	X	X*	
Field 12	X	X	X		X
Trench	X	X			
SP-S				X	X
Polymatic	X	X			
Hot Air Welder					X

*** Requires optional Halar mirror heating element.**

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Design and Installation

Overview

Installing any piping system properly requires pre planning. The installation is more than the welding of components. It requires the proper environment, material inventory, welding equipment, tools, and thorough training.

The selection of the type of welding method conducted on a single wall industrial piping project should be based on the following criteria:

- Material
- Sizes to be installed
- Welding location
- Type of installation
- Available expertise

A chemical system is a critical utility within a plant's operation. An unplanned shutdown can prove to be more costly than the piping construction itself. One bad weld can cause hours of repair and frustration, as well as significant lost revenue. For these reasons, it is critical to receive training at the time of job start-up and use certified personnel throughout the course of a project.

Design & Installation Considerations

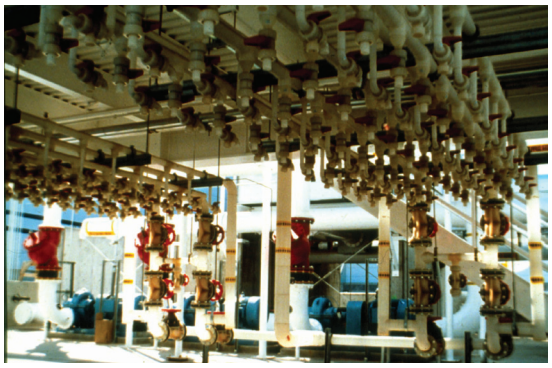
System Design and Installation

Choosing the right material is the first step in the process of designing a chemical piping system. The important factors involved in making the "best" choice include chemical compatibility, process requirements, temperature resistance, pressure rating, installation considerations, joining integrity and cost of ownership.

Usually you have several options to choose from in deciding what material to use for your new industrial piping system. The factors to consider are primarily life expectancy and cost of ownership. If the life expectancy is the same for all the possible options, other factors like installation concerns and available welding methods are also determining factors.

Hanging any thermoplastic system is not that much different than hanging a metal system. Typically, the spacing between hangers is shorter due to the flexibility of plastic. In addition, the type of hanger is important. Consult Asahi/America's Engineering Design Guide for specifics.

Plastic pipe systems will expand and contract with changing temperature conditions. It is the rule and not the exception. The effect of thermal expansion must be considered and designed for in each and every thermoplastic pipe system. Thermal effects in plastic versus metal are quite dramatic. Consult Asahi/America's Engineering Design Guide for calculations and formulas needed to allow for thermal expansion.



An increase in temperature in a system will cause the pipe to want to expand. If the system is locked in position and not allowed to expand, stress in the system will increase. If the stress exceeds the allowable stress the system can tolerate, the piping will fatigue and eventually could fail.

To compensate for thermal expansion, Asahi/America recommends using loops, offsets, and changes in direction. By using the pipe itself to relieve the stress, the integrity of the pipe system is maintained.

Welding Methods

There are three main joining methods used for Proline® piping systems: butt, socket and electrofusion. Often a system will employ more than one of these options in order to facilitate the installation the best way possible. Each method yields an integrous – full pressure rated – fusion joint as strong as the pipe itself. The times to make and cure the joints are shorter than other joining methods like: solvent cementing PVC and CPVC pipes, welding, soldering or threading metal pipes, adhesive bonding FRP pipes or flaring/flanging lined steel pipes.

Butt Fusion

Butt fusion is where the ends of the pipes and/or fittings are butted together. The butt fusion tool is a bench tool. This method always produces a minimum bead on both the inside and outside of the joint. In this method, couplings are not required to make pipe to pipe connections. Butt fusion is available in two formats: contact and non-contact (also known as: infra-red or IR). The difference is that contact the material touches the heater plate and in non-contact the material does not touch the heat source. Most industrial fluid handling applications use contact fusion. Butt fusion is available from 1/2" up to 60" + diameters.

The illustration to the right shows the contact butt fusion process.

The basic steps are as follows:

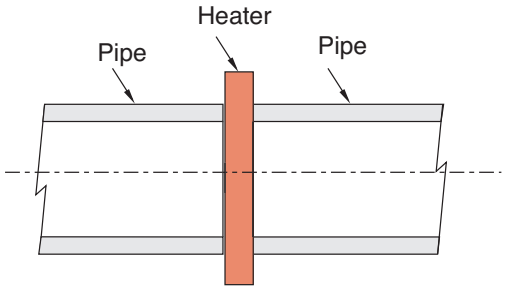
- Initial Melt: After planing the pipes, they are applied to the heater plate under an initial pressure until a melt is seen all the way around.

- Heat Soak: Once the initial melt is achieved, the pressure is lowered close to zero and the heat soak time is counted.

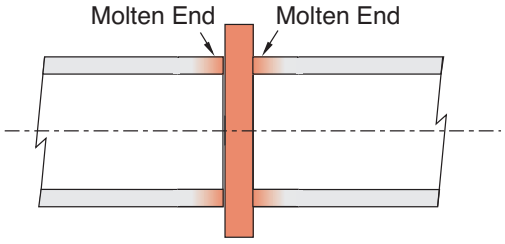
- Joining: After the heat soak time is up, the pipes are separated from the heater plate, the heater plate is removed and then (while the two surfaces are still molten), the pipes are joined together quickly and the initial pressure is applied.

- Curing: The joint is left alone (under pressure) during the cooling time.

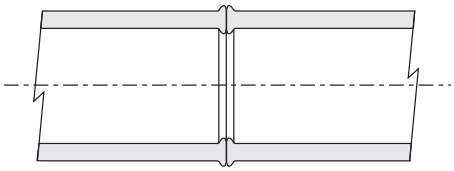
The process is complete and the joint can be immediately moved to prepare for the next joint.



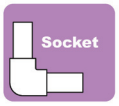
Inital Melt



Heat Soak Time



Joining and Cooling



Socket Fusion

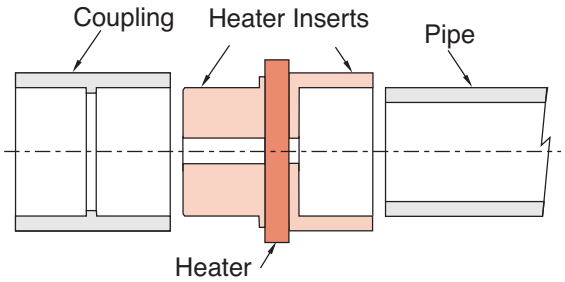
Socket fusion is where the inside socket of the fitting and the outside surface of the pipe are melted and the pipe is then inserted into the socket of the fitting. This method is available in size range from 1/2" up to 4". Socket fusion tools are available in a hand-held version and a bench version. Hand-held socket fusion is usually used for smaller sizes like 1/2" – 1" while the bench tool can be used for all sizes.

The illustration to the right shows socket fusion steps:

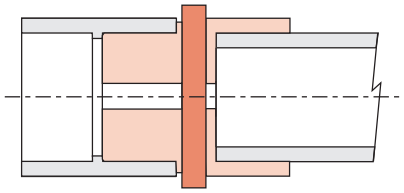
• Melting the Pipe and Fitting: After peeling the end of the pipe, insert the pipe and the fitting onto the heater bushings simultaneously and hold for the heating time.

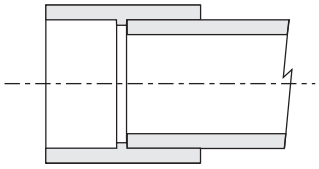
• Making the Joint: After the heating time, pull the pipe and fitting off the heater bushings and immediately insert the pipe into the socket of the fitting up to the socket depth.

• Curing: After insuring the pipe has been inserted properly, allow the new fitted joint to cool for the specified time before moving the joint.



Preparation of the Weld


Alignment and Preheat


Joining and Cooling

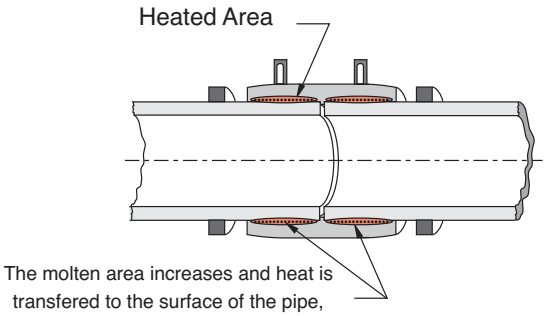
Electrofusion

Electrofusion utilizes couplings only. The electrofusion coupling is fitted with a metal electrically generated heating coil imbedded just under the surface of the inside wall of the fitting. There are two leads that come out of the OD of the fitting for connecting the wires to the fitting for fusion. Electrofusion is used more for convenience rather than as the primary joining method for an entire project. It is especially useful in making position joints over head in a rack where it is more difficult to use butt or socket fusion.

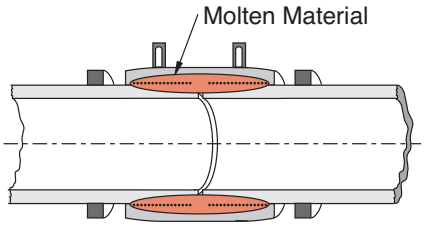
The illustration to the right shows the electrofusion process:

• Cooking the Joint: After peeling the two pipes, they are both inserted into the socket of the coupling up to the stop. Two leads are connected to the coupling from the heating unit. The joint is then fused.

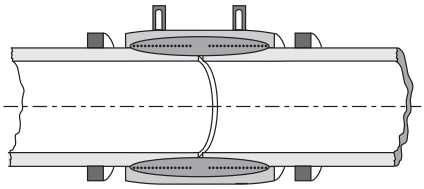
• Curing: After fusion, the coupling should be allowed to cool for the prescribed curing time. After curing, the joint can be moved.



Initial Heating

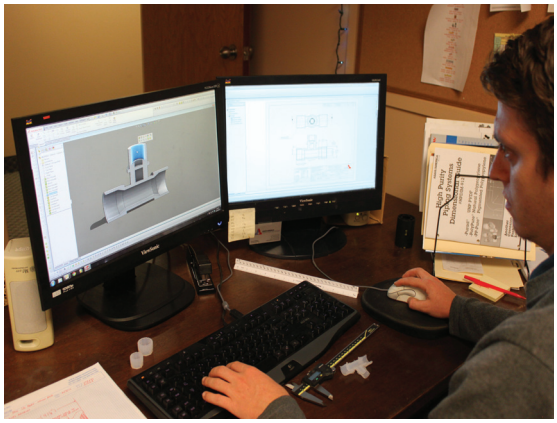


Weld Forms


Completed Weld

Custom Fabrication

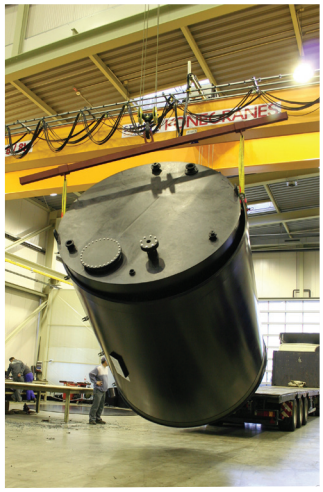
Asahi/America, Inc. provides fully customized assemblies, tanks and fittings to support the most demanding customer needs. Our thermoplastic experts can assist in up front design or post design manufacturing. From micro-machining to mega-assemblies, Asahi is poised to help solve your corrosion problem.



Support
- Staff engineers for design analysis
- Industry leading turnaround time
- Onsite start up training

Services
- Prefabrication in spool pieces
- Precision plastics machining
- Design and development

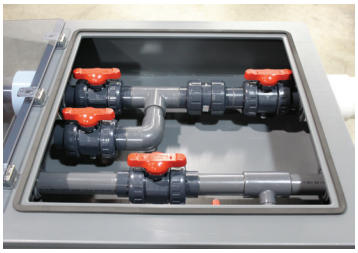
Specialty Products



Tanks

Fabricated Fittings and Spools

Skids



Valve Enclosures

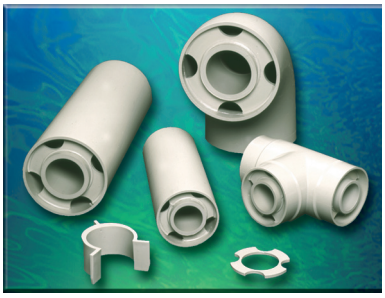
Buried Manway

Double Containment Piping Systems

Asahi/America has been the industry leader in engineered thermoplastic double contained piping systems for decades. Our systems have been successfully installed with confidence across a broad range of industries.

We offer the broadest range of quality thermoplastic double contained piping systems available. Ranging in sizes from 1x2 to 16x20 and above, choosing Asahi/America provides maximum flexibility in system engineering and design. Materials of construction by standard size and system include:

Duo-Pro®

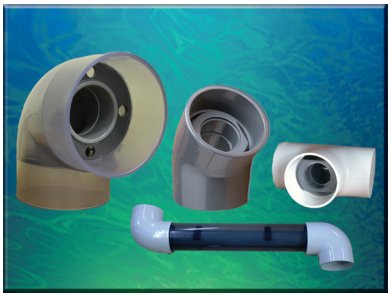


Standard Sizes: 1x3 through 16x20
Materials: PP, PVDF and E-CTFE (Halar®)
Fabricated Double Containment

Poly-Flo®

Standard Sizes: 1x2, 2x3 and 4x6
Materials: PP, PE
Extruded & Molded Double Containment

Pro-Lock®

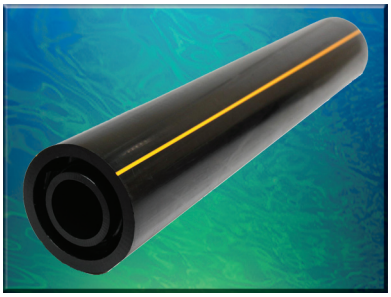


Standard Sizes: 1/2x2 through 4x8
Materials: PVC and C-PVC
Schedule 40 & 80 Double Containment

Fluid-Lok®

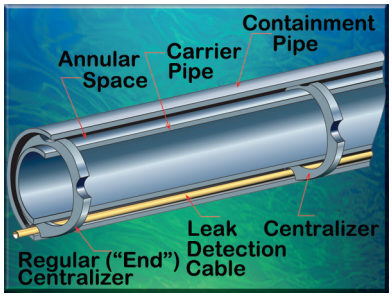
Standard Sizes: 1/2x2 though 24x32
Materials: PE 4710

Chem Prolok®



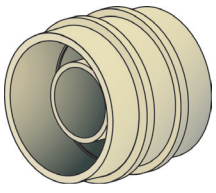
Standard Sizes: 1/2x2 through 24x32
Materials: Chem Proline® PE
Fabricated Double Containment

Leak Detection



Continuous
Low Point
Auto

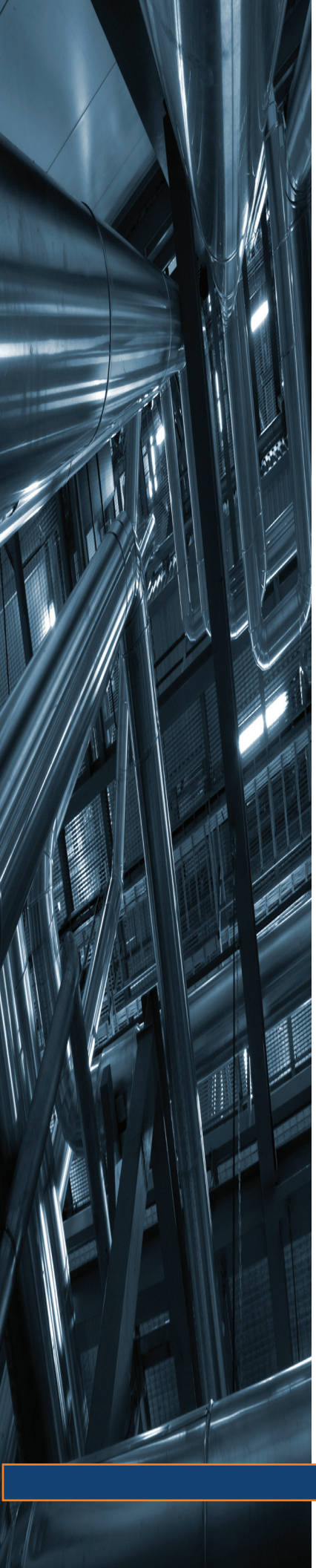
Dogbone®



At the heart of all Asahi/America's double contained systems is our patented Dogbone® fitting. The unique engineered design of the Dogbone® provides numerous advantages to reliable and secure double containment systems which include:

- Transition from double contained to single wall systems
- Locking of the inner pipe to the outer pipe for proper stress control
- The means for system compartmentalization in case of carrier leak
- Control of thermal expansion forces and system restraint

ASAHI/AMERICA®



Another Corrosion Problem Solved.™

ASAHI/AMERICA®

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