

enpure™

Enpure® proves itself as the superior high purity system manufacturing industries and research facilities are increasingly requiring high purity water systems that will meet the stringent requirements of their operations. Whether the application is for ultra pure water or for transporting chemically pure agents of foodstuffs, water purification technologies such as distillation, de-ionization, reverse osmosis and filtration eliminate a variety of impurities such as bacteria, particulates and both organic and inorganic contaminants.

The purity of a system depends on the leach ability of the material and joining method used to assemble the system.

Traditional materials used for handling high purity water have been metal and glass piping. The issue is that metals can exhibit problems with trace metal contamination; and elements such as sodium, boron, silica, lead and arsenic can be leached out of glass piping.

Over the past twenty years, advances in thermoplastic technology have enabled the effective use of plastics for high-purity water distribution systems, even in aggressive ultra high purity applications.

APPLICATIONS

- Food processing
- Laboratories
- Hospitals
- Universities
- Research facilities
- Biotechnology
- Chemical manufacturing
- Photographic chemical processing
- Effluent treatment plants
- Water treatment plants
- Pharmaceutical manufacturing

STANDARDS



FDA Code of Federal Regulations
CFR Title 21-177.1520 2002



DID YOU KNOW?

Enpure is manufactured from special high purity natural polypropylene materials. No regrind material or pigment is used in the production of pipe or fittings. Using virgin un-pigmented material ensures purity. To avoid contamination during manufacturing, the pipe is capped and boxed immediately after production. Enpure is a low-cost solution with a high resistance to chemicals, corrosion, and abrasion. It also has improved flow characteristics compared to traditional purity systems.



ADVANTAGES

- 1 Virgin Material**

Enpure is manufactured from special high purity virgin polypropylene materials. No regrind material is used in the manufacturing process, thereby avoiding contamination by colorants or other materials and potential loss of physical properties due to the incorporation of heat stressed materials.
- 2 Abrasion Resistance**

The inherent abrasion resistance of natural PP allows substantial increases in life expectancy compared to other materials. In many applications, natural polypropylene outperforms other materials such as metals.
- 3 Improved Flow**

IPEX piping is smooth and has a substantially lower roughness factor than metal and other materials, and since thermoplastics do not rust, pit, scale or corrode, the interior walls remain smooth in virtually any service.
- 4 Biological Resistance**

Enpure natural PP piping is resistant to fungi and bacterial growth. The smoothness of the interior walls inhibits bacterial growth by eliminating sites where bacteria can adhere.
- 5 Chemical Resistance**

Enpure natural PP offers a complete high purity system including pipe, fittings and valves with outstanding resistance to most organic and inorganic chemicals in common use. It is potentially vulnerable to strong oxidizing acids, certain organic solvents and chlorinated hydrocarbons.
- 6 Corrosion Resistance**

Our thermoplastic materials are immune to damage from naturally corrosive soil conditions as well as electrochemical or galvanic corrosion. These non-corroding properties extend service life and lower maintenance costs even in below-grade applications
- 7 Extended Life**

Once properly selected for the application and correctly installed, Enpure products provide years of maintenance free service.
- 8 Lower Costs**

IPEX Enpure natural PP has lower material and installation costs than other comparable materials such as stainless steel or PVDF.
- 9 Service Temperature**

IPEX Enpure line of pipe, fittings and valves are designed to meet the highest purity standards. It is because of this that there are no additives in the virgin polypropylene material. Additives such as antioxidants and UV stabilizers help thermoplastic materials with oxidation resistance. Since Enpure does not contain these additives, it is pressure rated at 73°F (23°C) and will experience lower pressure capabilities and a shortened service life if operated at elevated temperatures.
- 10 Standards and Approvals**

IPEX manufactures the widest range of thermoplastic piping systems available. All products are produced to the strictest internal quality control specifications and meet or exceed applicable regulatory standards.

VALVE SELECTION

As is the case with other thermoplastic components in a processing system, a valve must be selected based on the characteristics of the fluid medium, the system's operating parameters, and its intended function for a particular application. Certain valve types are more suitable than others for on/off service, throttling or modulating, automation, back flow prevention, etc. The following table summarizes the valves offered as part of the Enpure system.

Some other considerations that may be important when selecting a valve include: physical space requirements or constraints, connection style, manual or remote operation, as well as position indication or feedback.

AUTOMATED VALVES

IPEX can provide quarter turn pneumatic or electric actuators and mounting assemblies for Enpure ball valves. Pneumatic actuator bonnets are also available for Enpure diaphragm valves. A wide selection of accessories such as pilot solenoid valves, position indicators, and microswitches, allow various control and feedback options. Please refer to the Thermoplastic Valves and Quarter Turn Automation literature or contact IPEX for further details regarding availability.

ENPURE NATURAL PP VALVES

Valve Type	Sizes	Materials	Connections/Style	Pressure Rating (psi) at 73°F
VKD Series Ball Valves	1/2 - 3	Natural PP	Socket, Flange	150
VM Series Diaphragm Valves	1/2 - 2	Natural PP	Socket, Flange	150
SR Series Ball Check Valves	1/2 - 2	Natural PP	Socket, Flange	150

SHORT FORM SPECIFICATIONS

SCOPE

All high-purity water piping as shown on drawings shall be socket-fused, virgin natural polypropylene (containing no regrind material) as manufactured by IPEX. The complete system of piping, valves, fittings, faucets, pipe supports and fusion equipment shall be supplied and warranted by a single manufacturer.

DIMENSIONS

Physical dimensions of Enpure PP pipe and fittings shall meet or exceed Schedule 40 and Schedule 80 requirements.

PIPING

Piping shall be manufactured in 10' or 20' (3 m or 6.1 m) lengths to Schedule 40 and Schedule 80 dimensions from virgin, unpigmented, Type 2 high-impact copolymer

polypropylene conforming to ASTM D 4101, using no antioxidants or plasticizers.

Piping shall be capped at each end and boxed for protection and cleanliness at the point of manufacturing.



FITTINGS

Fittings shall be manufactured from virgin, unpigmented, Type 2 high-impact copolymer polypropylene conforming to ASTM D 4101, using no antioxidants or plasticizers. Fittings shall be designed for socket fusion utilizing IPEX socket fusion tools and shall have a working design pressure of 150 psi at 73°F (1,000 kPa @ 23°C). All fittings shall be packaged in polybags at the point of manufacturing to preserve fitting cleanliness.



FAUCETS

All metal faucets shall be polyster powered lacquer coated and have non-pigmented polypropylene wetted parts. Faucets shall be recirculating- style to ensure the elimination of static water pockets and shall be rated at 150 psi @ 73°F (1,000 kPa @ 23°C). All faucets shall be fully compatible with all other natural polypropylene piping components in terms of dimensions, quality and purity.

VALVES

All valves shall be manufactured from virgin, unpigmented type 1 Homopolymer polypropylene conforming to ASTM D 4101, using no antioxidants or plasticizers that could compromise water quality. Valves shall be designed for socket fusion utilizing IPEX socket fusion tools and shall have a working design pressure of 150 psi @ 73°F (1,000 kPa @ 23°C).



- All ball valves shall be double-blocking type with o-ring cushions under the PTFE seats, in-line micro adjustment capability and incorporate a spanner wrench in the handle.
- All diaphragm valves shall be weir-style featuring smooth (non-drilled) GRF bonnets with integrated fasteners (for cleanliness) and rising position indicator.
- All valves with EPDM diaphragms shall feature concentric ridges on valve body and smooth diaphragms.
- All valves with PTFE diaphragm shall feature machined (smooth) bodies and rigid PTFE diaphragms for positive seal and longer cycle life.
- All ball check valves shall be single union design with micro adjustable locking seat carrier.

SUPPORTS

All piping supports shall incorporate IPEX Cobra clips manufactured from U.V. stabilized polypropylene and designed to allow free axial pipe movement during expansion and contraction of a pipe system. Support spacings shall be to the manufacturer's recommendations for the design temperature of the system.

INSTALLATION

Installation shall be in accordance with the contract drawings, the manufacturer's recommendations and the local building codes. The entire system shall be installed stress-free and in proper alignment, with due allowance for expansion and contraction.

TESTING

The water-testing requirements on any complete piping system vary dramatically depending on the operating pressure, temperature, installation conditions, jointing method and the proposed service medium. If the testing is not determined by the engineer or governed by regulatory code, the manufacturer should be contacted.

Air or compressed gas shall never be used for pressure testing rigid thermoplastic piping systems.


JOINING METHODS


Joining methods should also be considered when reviewing sources of potential contamination. Not all joining methods are equal. Some joining methods can introduce contaminants into the system that are not introduced by the pipe material itself.


Below is a breakdown of the most common joining methods and their potential affects on purity. To ensure a contamination-free system, Enpure utilizes a socket fusion joining method.

Purity Level	Joining Methods	Description
●	Threaded Metal Joints	Threaded metal components may cause leaching of contained metals, local stagnation of fluid flow and may produce potential sites for bacterial growth when used with high purity water.
● ●	Soldered Metal Joints	Oxidation at welded, braised or soldered metal joints can cause contamination when exposed to the high purity water.
● ● ●	Solvent Welded Joints	Solvent welded plastic joints, unless carefully made and cured, can contribute contamination to high purity water.
● ● ● ●	Socket Fusion	Socket fusion is a simple process of melting and fusing components together resulting in a clean homogeneous joint. As no compounds are used in the process, sources of material contamination are eliminated. For these types of applications, socket fusion is the joining method of choice.


PRODUCT SELECTION CHART

	Dimension inches	Significant Number	Product Code
	Schedule 40 Pipe 10' Lengths		
	1/2	U1002	546000
	3/4	U1003	546001
	1	U1004	546002
	1-1/4	U1005	546003
	1-1/2	U1006	546004
	2	U1007	546005
	3	U1008	546006
	4	U1009	546007

	Dimension inches	Significant Number	Product Code
	Schedule 80 Pipe 10' Lengths		
	1/2	U1102	546008
	3/4	U1103	546009
	1	U1104	546010
	1-1/4	U1105	546011
	1-1/2	U1106	546012
	2	U1107	546013
	3	U1108	546014
	4	U1109	546015

	Dimension inches	Significant Number	Product Code
	Schedule 40 Pipe 20' Lengths		
	1/2	U1002-20	546020
	3/4	U1003-20	546021
	1	U1004-20	546022
	1-1/4	U1005-20	546023
	1-1/2	U1006-20	546024
	2	U1007-20	546025
	3	U1008-20	546026
	4	U1009-20	546027

Note: 20' Enpure pipe lengths are non-stock items available upon special request.

	Dimension inches	Significant Number	Product Code
	Schedule 80 Pipe 20' Lengths		
	1/2	U1102-20	546028
	3/4	U1103-20	546029
	1	U1104-20	546030
	1-1/4	U1105-20	546031
	1-1/2	U1106-20	546032
	2	U1107-20	546033
	3	U1108-20	546034
	4	U1109-20	546035

Note: 20' Enpure pipe lengths are non-stock items available upon special request.

IPEX components are dimensionally matched; do not install Enpure system components with components of other brands.