

## 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.

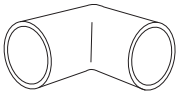
### TESTING

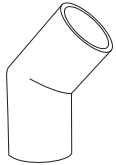
The water-testing requirements on any complete piping system vary dramatically depending on the operating pressure, temperature, installation conditions, jointing method and the proposed service medium. If the testing is not determined by the engineer or governed by regulatory code, the manufacturer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

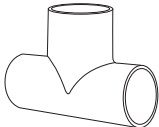
**Air or compressed gas shall never be used for pressure testing rigid thermoplastic piping systems.**

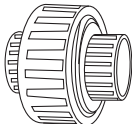
## PRODUCT SELECTION CHART – ENPURE


	Dimension inches	Significant Number	Product Code
	1/2	U1202	537122
	3/4	U1203	537123
	1	U1204	537124
	1-1/4	U1205	537125
	1-1/2	U1206	537126
	2	U1207	53717
	3	U1208	537128
	4	U1209	537129

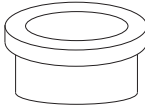
	Dimension inches	Significant Number	Product Code
	1/2	U1402	537142
	3/4	U1403	537143
	1	U1404	537144
	1-1/4	U1405	537145
	1-1/2	U1406	537146
	2	U1407	537147
	3	U1408	537148
4	U1409	537149	

	Dimension inches	Significant Number	Product Code
	1/2	U1502	537152
	3/4	U1503	537153
	1	U1504	537154
	1-1/4	U1505	537155
	1-1/2	U1506	537156
	2	U1507	537157
	3	U1508	537158
4	U1509	537159	

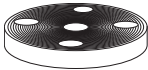
	Dimension inches	Significant Number	Product Code
	1/2	U1602	537162
	3/4	U1603	537163
	1	U1604	537164
	1-1/4	U1605	537165
	1-1/2	U1606	537166
	2	U1607	537167
	3	U1608	537168
4	U1609	537169	

	Dimension inches	Significant Number	Product Code
	1/2	U1702	537172
	3/4	U1703	537173
	1	U1704	537174
	1-1/4	U1705	537175
	1-1/2	U1706	537176
	2	U1707	537177

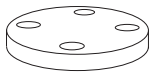
	Dimension inches	Significant Number	Product Code
	1/2	U1802	537182
	3/4	U1803	537183
	1	U1804	537184
	1-1/4	U1805	537185
	1-1/2	U1806	537186
	2	U1807	537187
	3	U1808	537188

	Dimension inches	Significant Number	Product Code
	1/2	U1902	537192
	3/4	U1903	537193
	1	U1904	537194
	1-1/4	U1905	537195
	1-1/2	U1906	537196
	2	U1907	537197
	3	U1908	537198
4	U1909	537099	

Note: One stub flange and one steel backing flange are required for complete flange system.

	Dimension inches	Significant Number	Product Code
	1/2	U2112	537222
	3/4	U2113	537223
	1	U2114	537224
	1-1/4	U2115	537225
	1-1/2	U2116	537226
	2	U2117	537227
	3	U2118	537228
	4	U2119	537229

Note: One stub flange and one steel backing flange are required for complete flange system.

	Dimension inches	Significant Number	Product Code
	1/2	U2102	537212
	3/4	U2103	537213
	1	U2104	537214
	1-1/4	U2105	537215
	1-1/2	U2106	537216
	2	U2107	537217
	3	U2108	537218
4	U2109	537219	

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