Xirtec® CPVC for Potable Water Applications

Submittal Data Sheet

Job or Customer: .....

Engineer: .....

Contractor: .....

Submitted by: ..... Date

Approved by: ..... Date

Order No: ..... Date

Specification: .....

< STANDARDS >

ASTM D1784
ASTM F441
ASTM F439
ASTM F437
ASTM F1970
NSF 14
NSF 61

CAN/ULC S102.2

ASTM E84

Please see our listing on agency websites for NSF compliant pipe and fittings.

www.nsf.org

Xirtec® CPVC is a thermoplastic piping system that may be used for the distribution of potable water in the United States and where approved by Authorities Having Jurisdiction. Pipe, valves and fittings are manufactured and available in sizes 1/2" through 6" diameter for potable water applications. The maximum operating temperature of Xirtec CPVC for potable water use is 160°F. Xirtec CPVC has proven to be an excellent piping material for hot corrosive liquids, hot and cold water distribution and similar applications above the operating temperature range of PVC.

Pipe Physical Properties

Properties	Corzan® CPVC	Standards
Cell classification	24448	ASTM D1784
Specific gravity	1.51	ASTM D792
Tensile strength, psi at 73°F	7,320	ASTM D638
Modulus of elasticity tensile, psi at 73°F	423,000	ASTM D638
Flexural strength, psi	13,200	ASTM D790
Izod impact, ft.lbs./in. at 73°F, notched	10.0	ASTM D256
Compressive strength, psi	10,100	ASTM D695
Poisson's ratio	0.33	
Working stress, psi at 73°F	2,000	
Coefficient of thermal expansion in./in./°F (x 10^{-5})	3.4	ASTM D696
Linear expansion, in./10°F per 100' of pipe	0.41	
Maximum operating temperature under pressure	200°F (93°C)	
Deflection temperature under load, °F at 66 psi	n/a	ASTM D648
Deflection temperature under load, °F at 264 psi	239	ASTM D648
Thermal conductivity, BTU.in./hr.ft^2.°F	0.95	ASTM C177
Burning rate	Self extinguish	ASTM D635
Burning class	V-0	UL-94
Flash ignition, °F	900	
Limited oxygen index (%)	60	ASTM D2863-70
Water absorption, %, (24 hrs. at 73°F)		ASTM D570

Pipe Availability

Pipe Size	
10 ft. Schedule 80	20 ft. Schedule 80
1/2" - 6"	1/2" - 6"

Molded Fittings Availability

Fittings	Size (inches) Schedule 80
Tee (Soc)	1/4" - 6"
Reducing Tee (Soc)	3/4" - 6" x 3/4" - 6" x 1/2" - 4"
90° Elbow (Soc)	1/2" - 6"
45° Elbow (Soc)	1/2" - 6"
Coupling (Soc)	1/2" - 6"
Reducer Coupling (Soc)	3/4" - 6" x 1/2" - 4"
Male Adapter (Soc x Mpt)	1/2" - 4"
Reducer Bushing (Spig x Soc)	3/4" - 6"
Cap (Soc)	1/2" - 6"

Specialty Fittings and Accessories

Fittings	Size (inches)
CPVC Female Adapters (Soc x Bronze FPT)	1/2" - 2"
CPVC Male Adapters (Soc x Bronze MPT)	1/2" - 2"
Stainless Steel Maintenance Coupling	1" - 4"
CPVC IPS/CTS Transition Adapters (Soc x Sp)	1/2" - 3/4"
CPVC One Piece Ball Valve (Soc x Soc)	1/2" - 1"
Union (Soc x Soc)	1/2" - 4"
CPVC Full Pressure Flange Kit	2-1/2" - 6"
One-Piece Flange	1/2" - 6"
Vanstone Flange (Sp)	3"-6"
Heavy Duty Vanstone Flange (Soc w/ Fiberloc Ring)	1-1/2", 2", 3"-6"
Blind Flange	1/2" - 6"

Handling and Storage

SAFE HANDLING AND STORAGE OF PIPE, FITTINGS & VALVES

Care must be taken when handling Xirtec CPVC products to ensure that pipe, fittings, valves and accessories are not damaged prior to installation. Take the following precautions to ensure Xirtec CPVC products remain in top condition prior to installation.

- Store pipe indoors if possible
- Pipe stored outside must be covered with a wellventilated white tarp
- Always keep pipe clean and covered in its original packaging
- Always store pipe on a flat surface and never store other products on top of pipe
- Do not drop or drag pipe
- Always store fittings and valves indoors in original packaging or repackage to protect from damage, dirt and debris
- Inspect all Xirtec CPVC products for shipping damage prior to installation
- Never install Xirtec CPVC products that are damaged

Installation

Xirtec CPVC Potable Water Piping System is a solvent welded system.

The Xirtec CPVC System also comprises of fittings that allow for flanging and threading.

Please refer to the *Volume VII: Xirtec CPVC Potable Water Piping System Technical Manual* for detailed installation methods and instructions.

Cement Types

Joints for the Xirtec CPVC Potable System should be made using using primers and CPVC heavy-bodied, mediumsetting cements that meet or exceed the requirements of ASTM F656 and ASTM F493 respectively. Follow all solvent welding instructions provided in the *Volume VII: Xirtec CPVC Potable Water Piping System Technical Manual.*

Testing

SYSTEM ACCEPTANCE (HYDROSTATIC PRESSURE) TEST

After the Xirtec CPVC system has been installed, it is important to test and inspect it for joint integrity. Leave all concealed pipe and fittings uncovered until the required test is completed and approved by the local Authority Having Jurisdiction.

Generally, a test pressure of 1.5 times the system working pressure for the pipe installed is adequate to a maximum test pressure of 150 psi at 73 °F. It is recommended that hydrostatic testing be carried out before commissioning the line into usage. The hydrostatic test procedures provided in the System Acceptance section of the *Volume VII: Xirtec CPVC Potable Water Piping System Technical Manual* should be followed after all the solvent welded joints, in the section to be tested, have been allowed to cure fully (see tables in Average Joint and Cure Schedule in *Volume VII: Xirtec CPVC Potable Water Piping System Technical Manual*).

Pressure testing with compressed air is strictly prohibited with Xirtec CPVC.

Prior to testing, precautions must be taken to protect personnel and property in case of test failure.

⚠ WARNING

- **NEVER** use compressed air or gas in Xirtec CPVC pipe, fittings and valves.
- **NEVER** use or test Xirtec CPVC with compressed air or other gases. Do not use air-over-water boosters.

Use of compressed air or gas in Xirtec CPVC pipe, fittings, and valves can result in explosive failures and cause severe injury or death.

NOTICE

Do not exceed the maximum working pressure of any system components including pipe, fittings, valves, threaded adapters, unions, maintenance couplings or flanges.

- The pressure rating of all components must be reduced when operating temperatures exceed 73°F. Refer to the Xirtec CPVC Correction Factor Table in the System Pressure and Temperature Ratings section of *Volume VII: Xirtec CPVC Potable Water Piping System Technical Manual.*
- Exceeding the maximum working temperature or pressure of the system may result in system failure and/or property damage.

Xirtec CPVC Potable Water System

General Requirements

Operating temperature for Xirtec CPVC used in hot and cold water distribution systems shall not exceed 160°F. Installation practices shall conform to IPEX USA LLC guidelines.

Scope

This specification sheet covers the manufacturers' requirements for Xirtec CPVC Schedule 80 IPS pressure pipe and Schedule 80 IPS pressure fittings. The pipe and fittings meet or exceed all applicable ASTM and NSF standards and are suitable for potable water.

Xirtec CPVC Materials

Rigid CPVC (chlorinated polyvinyl chloride) used in the manufacturing of Xirtec CPVC Schedule 80 pipe complies with the material requirements of ASTM D1784 and has a cell classification of 24448. Rigid CPVC used in the manufacturing of Schedule 80 Fittings shall meet the material requirements of ASTM D1784 and have a cell classification of 23447. Raw material used in the manufacturing shall contain the standard specified amounts of color pigment, stabilizers, and other additives. The compounds used are listed to the requirements of NSF 61 for use in potable water service. The compound must be Corzan grade. The pipe compound shall be listed and labelled as having a Flame Spread Index (FSI) of not more than 25 and a Smoke Developed Index (SDI) of not more than 50 when tested in general accordance with ASTM E84 or UL 723.

Dimensions

Physical dimensions and properties of Xirtec CPVC Schedule 80 pipe shall meet or exceed the requirements of ASTM F441. Physical dimensions and properties of CPVC Schedule 80 fittings – socket type – shall meet the requirements of ASTM F439.

Physical dimensions and properties of Xirtec CPVC special engineered fittings shall meet the requirements of ASTM F1970.

Marking

Xirtec CPVC Schedule 80 pipe is marked as prescribed in ASTM F441 and NSF 14. The marking includes the following: IPEX; Xirtec CPVC 24448; IPS CPVC and the schedule pressure rating at 73°F; ASTM F441; NSF 14; and NSF 61 Potable. CPVC Schedule 80 fittings are marked as prescribed in ASTM F437 and F439, or F1970. The marking includes the following: IPEX; CPVC and the size of the fitting; ASTM F437 or ASTM F439; NSF 14; and NSF 61 potable.

Sample Specification

All Xirtec CPVC Schedule 80 pipe shall conform to ASTM F441/F441M and be third party certified to NSF 14. All Xirtec CPVC Schedule 80 pipe from 1/2" to 6" shall be made with a CPVC compound having a minimum cell classification of 24448. Pipe shall be of 10- or 20-foot lengths.

All Xirtec CPVC fittings must me third party certified to NSF 14. All Xirtec CPVC Schedule 80 fittings from 1/2" to 6" shall be made with a CPVC compound having a minimum cell classification of 23447.

All Xirtec CPVC Schedule 80 socket fittings shall conform to ASTM F439.

All Xirtec CPVC flanges shall have a 150-lbs bolt pattern as per ANSI B16.5 and conform to ASTM F1970 with pressure ratings of 150psi at 73°F.

All Xirtec CPVC Schedule 80 unions socket shall conform to ASTM F439 and meet ASTM F1970 with pressure ratings of 150 psi at 73°F.

All Xirtec CPVC one-piece ball valves & threaded adapters shall meet ASTM F1970 with pressure ratings of 400 psi at 73°F and 100 at 180°F.

The CPVC fitting compound shall be pressure rated in accordance with ASTM D2837 and have a hydrostatic design basis of 4000 psi at 72°F and 1000 psi at 180°F as listed in PPI publication TR-4. All CPVC Schedule 80 pipe and fittings shall be made from a 4000 psi HDB PPI rated compound.

All pipe, fittings and valves shall be compatible, manufactured using Corzan compound and be produced by one manufacturer as supplied by IPEX.

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the world's largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems
- PVC, CPVC, PP, PVDF, PE, ABS, and PEX pipe and fittings

Products manufactured by IPEX Inc. and distributed in the United States by IPEX USA LLC.