

# PIPING SYSTEMS FOR CHLOR-ALKALI PROCESSING APPLICATIONS



## CHEMICAL PROCESSING INDUSTRY SOLUTIONS

- Process Piping
- Thermoplastic Valves and Actuators
- Compressed Air
- Double Containment
- Corrosion Resistant Ventilation Duct
- Electrical & Automation Systems
- Liner Material for Dual Laminate Construction



We build tough products for tough environments®



## IPEX PIPING SYSTEMS FOR CHLOR-ALKALI PROCESSING APPLICATIONS

IPEX offers a complete line of thermoplastics to suit your industry needs. Pipes, Valves, Fittings and Ducting from a trusted and reliable single source. Superior chemical resistance with a variety of material choices allows IPEX to be a part of your industry solution. In the Chlor-Alkali Processing Industry, corrosion and chemical compatibility is an important consideration to provide safe and efficient system design.

- Corrosion resistant properties ensure long-term performance coupled with low maintenance costs
- Lightweight thermoplastics are cost effective and easy to install
- Ease of installation for refurbishments and repair of systems makes IPEX the supplier of choice amongst facilities maintenance personnel
- IPEX products are available through an extensive network of local distributors
- Local sales representation provides support where and when you need it
- Onsite training, prior to installation, ensures systems are installed without issue
- Responsive product support is provided by our team of applications engineers, technical sales representatives, material scientists and chemists
- Strong resistance to UV degradation
- IPEX offers solutions to easily accommodate Xirtec® expansion and contraction in your system
- IPEX Schedule 40 and Schedule 80 CPVC pipe are manufactured using Corzan® CPVC compounds which are specially formulated for the chemical processing industry
- Xirtec® CPVC made with Corzan® CPVC is suitable for the Low Calcium, Magnesium, Silicon, Nickel, Lead, and Tin requirements of membrane cells
- Xirtec® CPVC made with Corzan® CPVC is an excellent choice for Liner Material in Dual Laminate Construction. Providing consistent chemical resistance at elevated temperatures
- Xirtec® CPVC pipe can be welded to meet special fabrication requirements of the industry

## PROCESS PIPING

IPEX thermoplastic piping systems are available in a wide variety of sizes and fitting configurations and are suitable for use in dual laminate installations. PVC and CPVC possess outstanding resistance to the environment and to a wide range of chemicals. They will not rust, pit, scale, corrode or allow microbial growth on either the interior or exterior surfaces even in submerged water applications. These noncorroding properties ensure improved flow, lower maintenance costs, low leachables, and longer performance life for the system.



### Xirtec® PVC

Maximum Service Temperature  
of 140°F (60°C)

### Xirtec® CPVC

Maximum Service Temperature of 200°F (93°C)  
Reinforced: 220°F (104°C)

#### Availability

- Schedule 40 from 1/2" – 24"
- Schedule 80 from 1/4" – 24"

- Schedule 40 from 1/2" – 16"
- Schedule 80 from 1/2" – 16"

#### Applications

- |                 |                       |   |                       |
|-----------------|-----------------------|---|-----------------------|
| • Brine         | • Deionized Water     | • Wet Chlorine Gas  | • Sulfuric Acid       |
| • Anolyte       | • Seawater            | (Please consult with IPEX<br>for more information on<br>this application) | • Bleach Production   |
| • Process Water | • Sodium Hypochlorite |   | • Potassium Carbonate |
| • Caustic Soda  | • Hydrochloric Acid   |   | • Sodium Carbonate    |

Xirtec® CPVC made with Corzan® CPVC

## THERMOPLASTIC VALVES

IPEX offers high quality, high performance industrial thermoplastic valves, actuators and instrumentation. These lightweight and long-life corrosion resistant valves save both time and money. Material options such as PVC, CPVC, PP, PVDF, and ABS offer a wide range of chemical compatibility and corrosion resistance making them ideal for a variety of applications.



#### Availability

- |   |   |
|---|---|
| • Ball Valves from<br>1/2" – 6"         | • Diaphragm Valves<br>from 1/2" – 6"            |
| • Butterfly Valves from<br>1-1/2" – 16" | • Check Valves from 1/2" – 8"                   |
|   | • Additional Valves & Accessories are Available |

## COMPRESSED AIR

Duratec® Composite Airline and Duraplus™ ABS Airline are designed for industrial compressed air pipe applications. Traditional metallic compressed air systems are a cause of unnecessary energy use, excessive wear and tear on compressors and high consumption of compressor oils and filters due to corrosion and leakage at pipe joints and fitting connections which often go undetected. IPEX thermoplastic compressed air systems are corrosion resistant and can be easily and quickly installed, modified or expanded without the need for specialized equipment.

### Duratec® AIRLINE SYSTEM

- Composite pipe and fittings for conveying compressed air and inert gases
- Available from from 1/2" – 1"
- Rated for continuous operating pressures of 200psi at 73°F (23°C)



### Duraplus™ air-line

- A high-impact, ductile ABS pressurized piping system for conveying compressed air
- Available from 20mm – 110mm (1/2" – 4")
- Rated for continuous operating pressures of 185psi at 73°F (23°C)

(Not Available in Canada)



## DOUBLE CONTAINMENT FOR ADDED PROTECTION – WHERE LEAKS ARE NOT AN OPTION

With over 35 years of experience in engineered double containment systems, IPEX offers a comprehensive product line, with extensive experience using similar and dissimilar materials. From exotic metals, to thermosets and thermoplastics, IPEX double containment specialists are dedicated to supporting engineering designs and providing contractor training for the installation of each system.

As an alternative to lined pipe, double contained pipe safeguards against leaks but also offers increased protection from external damage or impact and provides cost savings with economical material combinations. Double contained systems can be effectively monitored for leaks using cable or low point sensors which easily integrate with existing building management systems.

### Examples of Material Combinations:

- SCH 40 CS x SCH 40 CS
- SCH 80 CS x SCH 80 CS
- SCH 80 CS x PVC 80
- SCH 80 CS x CPVC 80
- SCH 80 CS x FRP
- SCH 10 SS x SCH 10 SS
- SCH 10 SS x FRP
- SCH 10 SS x CPVC 80
- PVC 80 x PVC 80
- PVC 80 x PVC 40
- PVC DWV x PVC DWV
- CPVC 80 x CPVC 80
- CPVC 80 x PVC 80
- PVDF 80 x CPVC 80
- PVDF 80 x PVC 80

Availability	Carrier	Containment
Guardian™ PVC & CPVC Double Containment	1/2" – 12"	2" – 18"
CustomGuard® Made for Your Application	1/2" – 20"	2" – 26"
Encase™ Corrosive Waste Drainage Polypropylene System	1-1/2" – 8"	4" – 12"
Drain-Guard™ DWV for Safety and Reliability	1/2" – 12"	4" – 16"
Clear-Guard™ for Visual Inspection Advantage	–	1/2" – 8"
Centra-Guard™ Electronic Low Point Leak Detection		



Guardian™ CustomGuard®  
Centra-Guard™ Encase™  
Drain-Guard™ Clear-Guard™



### Suitable Applications Include

#### Chemical Spill Prevention

Use double contained piping in place of catch basins, sumps and trenches to protect from spills. Cut down on costs, expand the use of plastic to areas without footprint reliant containment.

#### Impact Protection

Add an extra layer of protection to your system. Accidents happen, protect your pipe from impacts and protect yourself from unplanned, unwanted chemical releases.

#### Emergency Fuel Supply

CustomGuard® Double Containment piping systems are the ideal solution for the conveyance of petroleum products. Our systems satisfy the federal requirement 40 CFR 280 for underground storage tanks (UST)\*.

\* Please check with your local regional authority for specific requirements

## CORROSION RESISTANT VENTILATION DUCT

IPEX's vinyl ventilation ductwork is ideally suited for both high humidity and corrosive applications in the Chlor-Alkali industry. These ducts can be used as a cost-effective alternative to stainless steel.

Availability
<ul style="list-style-type: none"> <li>• PVC from 6" – 24"</li> <li>• CPVC from 6" – 16"</li> </ul>



## ELECTRICAL & AUTOMATION SYSTEMS

**Scepter® Scepter JBox™ Sceptralight™**

Electrical and automation systems are subjected to harsh corrosive and humid environments. IPEX offers a wide range of lighting, conduit, fittings and junction boxes made from industrial grade PVC.



# COMMON CHEMICAL RESISTANCE FOR THE CHLOR-ALKALI INDUSTRY

Brine Preparation & Handling

Electrolysis

Hypo Treatment

Media	Formula	Concentration	ABS	PVC	CPVC	PP	PVDF	FPM	EPDM	PTFE
Brine	ClH <sub>2</sub> NaO	Saturated	R <sup>140</sup>	R <sup>140</sup>	R <sup>200</sup>	R <sup>176</sup>	R <sup>285</sup>	R <sup>212</sup>	R <sup>212</sup>	A
Potassium Chloride	KCl	Aqueous	R <sup>140</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>176</sup>	R <sup>176</sup>	R <sup>212</sup>	R <sup>212</sup>	R <sup>248</sup>
Sodium Chloride	NaCl	Aqueous	R <sup>140</sup>	R <sup>140</sup>	R <sup>200</sup>	R <sup>176</sup>	R <sup>285</sup>	R <sup>176</sup>	R <sup>212</sup>	R <sup>248</sup>
Sodium Hydroxide (Caustic Soda)	NaOH	<50%	R <sup>104</sup>	R <sup>104</sup>	A	R <sup>104</sup>	A	N	R <sup>140</sup>	R <sup>248</sup>
Potassium Hydroxide (Caustic Potash)	KOH	<25%	R <sup>68</sup>	R <sup>104</sup>	A	R <sup>176</sup>	N	N	R <sup>140</sup>	R <sup>248</sup>
Potassium Carbonate	K <sub>2</sub> CO <sub>3</sub>	Saturated	R <sup>140</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>104</sup>	R <sup>176</sup>	R <sup>212</sup>	R <sup>176</sup>	R <sup>248</sup>
Sodium Carbonate	Na <sub>2</sub> CO <sub>3</sub>	Saturated	R <sup>140</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>104</sup>	R <sup>176</sup>	R <sup>176</sup>	R <sup>176</sup>	R <sup>248</sup>
Hydrochloric Acid	HCl	<10%	R <sup>104</sup>	R <sup>140</sup>	R <sup>180</sup>	R <sup>104</sup>	R <sup>212</sup>	R <sup>176</sup>	R <sup>104</sup>	R <sup>248</sup>
		<25%	R <sup>68</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>104</sup>	R <sup>212</sup>	R <sup>176</sup>	R <sup>68</sup>	R <sup>248</sup>
		<30%	N	R <sup>140</sup>	R <sup>180</sup>	R <sup>104</sup>	R <sup>212</sup>	R <sup>140</sup>	N	R <sup>248</sup>
		<37%	N	R <sup>140</sup>	R <sup>140</sup>	R <sup>104</sup>	R <sup>212</sup>	R <sup>104</sup>	N	R <sup>248</sup>
Wet Chlorine Gas	Cl <sub>2</sub>	Saturated	N	N	A	N	A	A	N	R <sup>212</sup>
Chlorinated Condensate Water	Solution	Saturated	N	R <sup>140</sup>	R <sup>200</sup>	N	R <sup>212</sup>	A	R <sup>68</sup>	R <sup>212</sup>
Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub>	<10%	R <sup>140</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>176</sup>	R <sup>250</sup>	R <sup>212</sup>	R <sup>176</sup>	R <sup>248</sup>
		<30%	R <sup>140</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>140</sup>	R <sup>250</sup>	R <sup>212</sup>	A	R <sup>248</sup>
		<50%	R <sup>68</sup>	R <sup>140</sup>	R <sup>176</sup>	R <sup>104</sup>	R <sup>250</sup>	R <sup>212</sup>	A	R <sup>248</sup>
		<70%	N	A	R <sup>176</sup>	A	R <sup>200</sup>	R <sup>176</sup>	N	R <sup>212</sup>
		<85%	N	A	R <sup>104</sup>	A	R <sup>200</sup>	R <sup>176</sup>	N	R <sup>212</sup>
		<93%	N	A	R <sup>104</sup>	N	R <sup>200</sup>	R <sup>176</sup>	N	R <sup>212</sup>
Sodium Hypochlorite	NaClO	<98%	N	N	R <sup>104</sup>	N	R <sup>125</sup>	N	N	R <sup>176</sup>
		<0.5%	R <sup>68</sup>	R <sup>140</sup>	R <sup>200</sup>	R <sup>68</sup>	R <sup>275</sup>	R <sup>104</sup>	R <sup>68</sup>	R <sup>140</sup>
		<3%	N	R <sup>104</sup>	R <sup>200</sup>	R <sup>68</sup>	R <sup>275</sup>	R <sup>104</sup>	R <sup>68</sup>	R <sup>140</sup>
		<5%	N	R <sup>104</sup>	R <sup>200</sup>	N	R <sup>275</sup>	R <sup>104</sup>	A	R <sup>140</sup>
Sodium Hypochlorite	NaClO	<12.5%	N	R <sup>104</sup>	R <sup>200</sup>	N	R <sup>200</sup>	R <sup>104</sup>	A	R <sup>140</sup>
		<15%	N	R <sup>68</sup>	R <sup>200</sup>	N	R <sup>200</sup>	R <sup>104</sup>	A	A
		Saturated	A	R <sup>140</sup>	R <sup>104</sup>	A	R <sup>248</sup>	A	R <sup>140</sup>	R <sup>248</sup>
Potassium Hypochlorite	KClO	Saturated	A	R <sup>140</sup>	R <sup>104</sup>	A	R <sup>248</sup>	A	R <sup>140</sup>	R <sup>248</sup>
Sodium Hydroxide (Caustic Soda)	NaOH	<50%	R <sup>104</sup>	R <sup>104</sup>	A	R <sup>176</sup>	A	N	R <sup>140</sup>	R <sup>248</sup>
Potassium Hydroxide (Caustic Potash)	KOH	<25%	R <sup>68</sup>	R <sup>104</sup>	A	R <sup>176</sup>	N	N	R <sup>140</sup>	R <sup>248</sup>
Potable Water	H <sub>2</sub> O	100%	R <sup>140</sup>	R <sup>140</sup>	R <sup>200</sup>	R <sup>176</sup>	R <sup>285</sup>	R <sup>212</sup>	R <sup>176</sup>	R <sup>248</sup>
Sodium Bisulfite	NaHSO <sub>3</sub>	Saturated	R <sup>122</sup>	R <sup>140</sup>	R <sup>140</sup>	R <sup>104</sup>	R <sup>212</sup>	R <sup>212</sup>	R <sup>176</sup>	R <sup>248</sup>
Sodium Thiosulfate	Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Aqueous	R <sup>140</sup>	R <sup>104</sup>	R <sup>200</sup>	R <sup>176</sup>	R <sup>212</sup>	R <sup>140</sup>	R <sup>140</sup>	R <sup>248</sup>

R = Resistant      A = Contact IPEX      N = Not Resistant

## RATINGS

Ratings are according to the product and suppliers.

The absence of any class indication for any given materials, signifies the absence of data for such material(s) with respect to the specific chemical(s), temperature(s) and concentration(s).

**NOTE:** Chemical resistance data is found in a laboratory setting and cannot account for all possible variables of an installed application. It is up to the design engineer or final user to use this information as guidance for a specific application design.

If a material is chemically resistant to the concentrated form of a specific chemical, it should be resistant to the diluted form of that same chemical.



## DESIGNED, MANUFACTURED AND BACKED BY IPEX

For more than 50 years, IPEX has been manufacturing thermoplastic pipe, valves and fittings – complete system solutions to meet the challenges of industry and construction. We formulate many of our own compounds, maintain strict quality control, and market and distribute our products throughout North America. IPEX manufactures systems from a broad range of materials including PVC, CPVC, PP, ABS, PVDF, PE and composite materials. Our total systems approach means you can be confident that all the material you need is designed, manufactured and backed by the same company. One source to stand behind you and your complete system.

## SALES AND CUSTOMER SERVICE

IPEX USA LLC  
Toll Free: (800) 463-9572  
[ipexna.com](http://ipexna.com)

### 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 earned a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial process piping systems
- Electrical systems
- Telecommunications and utility piping systems
- Irrigation systems
- Industrial, plumbing and electrical cements
- PVC, CPVC, ABS, PE, PEX, PVCO, PP and PVDF pipe and fittings (1/2" to 60")

Xirtec®, Duratec®, Duraplus™, Guardiian™, CustomGuard®, Centra-Guard™, Encase™, Drain-Guard™, Clear-Guard™, Scepter®, JBox™, and Sceptalight™ are trademarks used under license.

Xirtec® CPVC piping systems are made with Corzan® CPVC compounds. Corzan® is a registered trademark of the Lubrizol Corporation.

This literature is published in good faith and is believed to be reliable. However, it does not represent and/or warrant in any manner the information and suggestions contained in this brochure. Data presented is the result of laboratory tests and field experience.

A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.

