CPVC CHEMICAL RESISTANCE GUIDE

SECOND EDITION

CPVC CHEMICAL RESISTANCE GUIDE

Thermoplastics:
Corzan® CPVC
(Chlorinated-Polyvinyl Chloride)

IPEX
by aliaxis

Chemical Resistance Guide

Corzan® CPVC (Chlorinated-Polyvinyl Chloride)

2nd Edition

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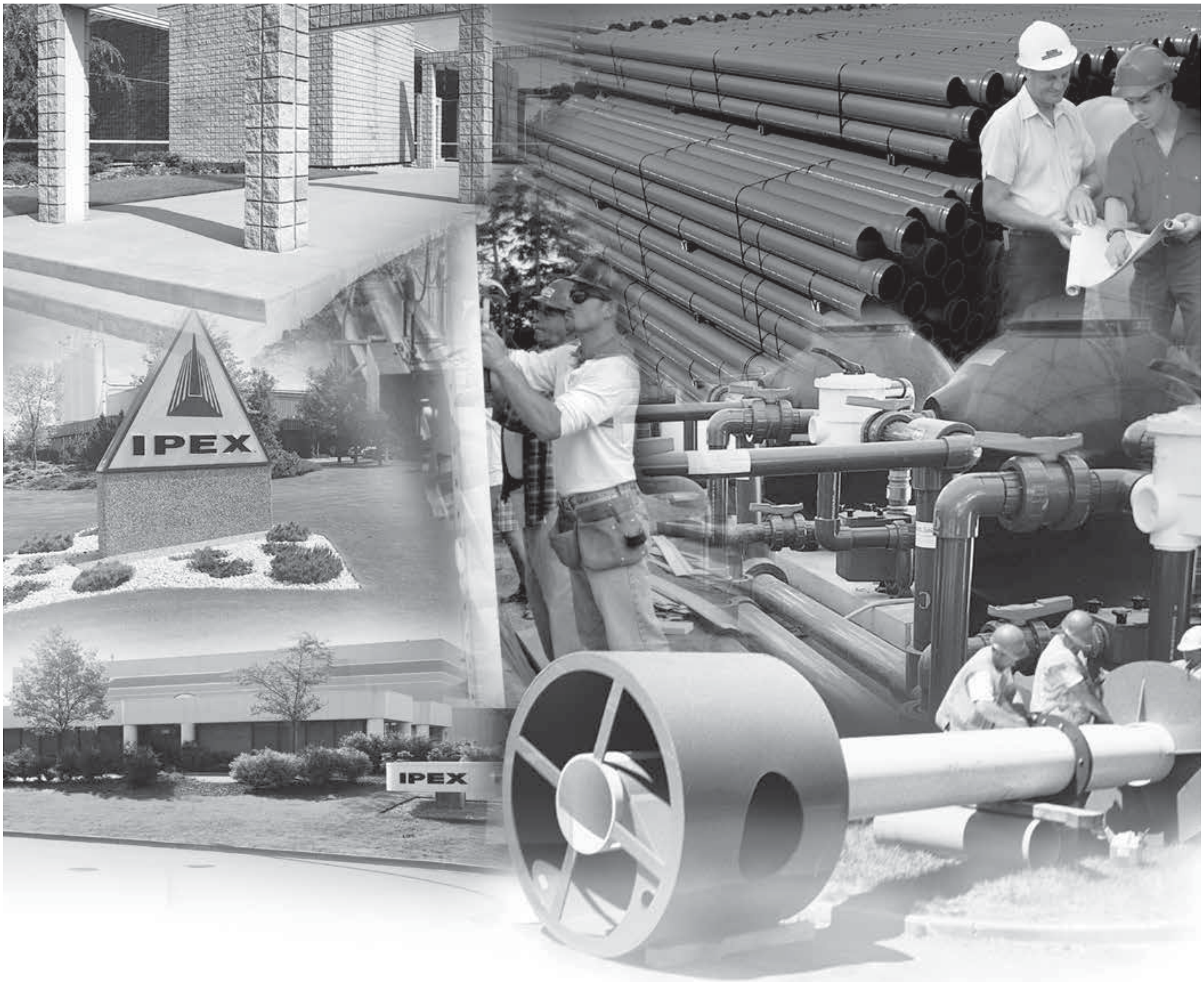


About IPEX

At IPEX, we have been manufacturing non-metallic pipe and fittings since 1951. We formulate our own compounds and maintain strict quality control during production. Our products are made available for customers thanks to a network of regional stocking locations from coast-to-coast. We offer a wide variety of systems including complete lines of piping, fittings, valves and custom-fabricated items.

More importantly, we are committed to meeting our customers' needs. As a leader in the plastic piping industry, IPEX continually develops new products, modernizes manufacturing facilities and acquires innovative process technology. In addition, our staff take pride in their work, making available to customers their extensive thermoplastic knowledge and field experience. IPEX personnel are committed to improving the safety, reliability and performance of thermoplastic materials. We are involved in several standards committees and are members of and/or comply with the organizations listed on this page.

For specific details about any IPEX product, contact our customer service department.

INTRODUCTION

Thermoplastics and elastomers have outstanding resistance to a wide range of chemical reagents. The chemical resistance of plastic piping is basically a function of the thermoplastic material and the compounding components. In general, the less compounding components used the better the chemical resistance. Thermoplastic pipes with significant filler percentages may be susceptible to chemical attack where an unfilled material may be affected to a lesser degree or not at all.

Some newer piping products utilize a multi-layered (composite) construction, where both thermoplastic and non-thermoplastic materials are used for the layers. Layered composite material pipe may have chemical resistance that differs from the chemical resistance of the individual material. Such resistance however, is a function both of temperatures and concentration, and there are many reagents which can be handled for limited temperature ranges and concentrations. In borderline cases, it will be found that there is limited attack, generally resulting in some swelling due to absorption. There are also many cases where some attack will occur under specific conditions, but for many such applications, the use of plastic will be justified on economic grounds when considered against alternative materials. Resistance is often affected (and frequently reduced) when handling a number of chemicals or compounds containing impurities. For this reason, when specific applications are being considered, it may be worthwhile to carry out tests using the actual product that will be encountered in service. The listing that follows does not address chemical combinations.

The information is based on immersion tests on unstressed coupons, experiments and, when available, actual process experience as well as data from tests inclusive of stress from temperature and pressure. The end user should be aware of the fact that actual service conditions will affect the chemical resistance.

Chemicals that do not normally affect the properties of an unstressed thermoplastic may cause completely different behavior (such as stress cracking) when under thermal or mechanical stress (such as constant internal pressure or frequent thermal or mechanical stress cycles). Chemical resistance data from immersion tests cannot be unconditionally applied to thermoplastic piping components subjected to continuous or frequent mechanical or thermal stresses.

When the pipe will be subject to a continuous applied mechanical or thermal stress, or to combinations of chemicals, testing that duplicates the expected field conditions, as closely as possible, should be performed on representative samples of the pipe product to properly evaluate plastic pipe for use in this application.

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.

NOTES

CORZAN® CPVC (CHLORINATED-POLYVINYL CHLORIDE)

All Chemical Resistance data for Corzan® CPVC (Chlorinated-Polyvinyl Chloride) material contained within this manual has been obtained from Lubrizol Advanced Materials, Inc.

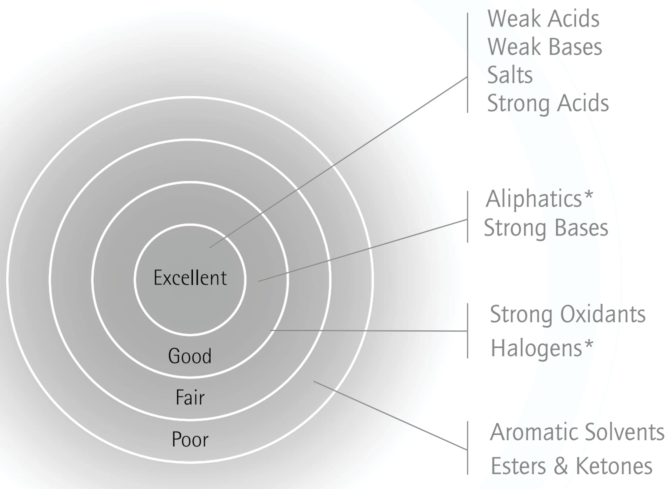
One of the key advantages of Corzan® CPVC is its excellent resistance to a broad range of corrosive environments. By replacing traditional materials with Xirtec® CPVC made with Corzan®, engineers can extend equipment service life and reduce maintenance, while minimizing process life-cycle cost.

Information presented is based on test data and field experience of chlorinated polyvinyl chloride (CPVC) materials manufactured by Lubrizol and is not intended to reflect the properties found with other suppliers of CPVC materials.

Disclaimer: The following information is provided as a guide for the selection of Xirtec® CPVC piping systems subjected to various chemical substances. The information in this guide is subject to change when new test data is available. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user. In all cases, a physical test of the material under actual operating conditions is the only way to ensure the success of a particular material for the application.

Classification:

R	Recommended: Minimal or no swelling and/or loss in tensile strength, low or no potential for Environmental Stress Cracking (ESC)
N	Not Recommended: Significant softening or degradation with loss in material strength
S	Satisfactory Resistance: Low to moderate swelling or degradation above certain temperatures and/or concentrations
E	Possible ESC: Environmental stress cracking possible with mechanical stress on the material. Contact Lubrizol.



Specific Notes:

1. The temperature of gray CPVC installed in direct sunlight can reach 175°F. This should be considered when establishing the maximum operating temperature of the system.
2. CPVC is not recommended for gas under pressure.
3. A silica-free grade of cement must be used.
4. Do not allow chemical to decompose inside closed off sections of piping as a dangerous overpressure situation could occur.

* To develop these recommendations, test data was reviewed in conjunction with field experience and information gathered from various sources to develop the recommendations shown. For industrial process piping applications, this testing comprised coupons of CPVC material immersed in the chemical and held at a constant temperature for 90 days. Resistance evaluations were made using weight gain and change in strength measurements following exposure. It should be noted that laboratory testing is by nature limited in scope and cannot possibly evaluate the effect of all potential variables on the performance of a complex operational piping system. Variations in pipe and fitting production quality, fluid composition, concentration, pressure and temperature; as well as system installation and maintenance can affect the life expectancy of any piping system, especially those carrying extremely corrosive chemicals such as peroxides or concentrated acids and caustics. The full hydrostatic pressure rating of the pipe may not apply to the entire range of temperature and concentration designated as recommended.

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
A		
Acetaldehyde	N	N
Acetic Acid, up to 10%	R	180°F (82°C)
Acetic Acid, Greater than 10%	E	E-180°F (82°C)
Acetic Acid, Glacial (pure)	N	N
Acetic Anhydride	N	N
Acetone, up to 5%	R	180°F (82°C)
Acetone, greater than 5%	E	E-180°F (82°C)
Acetone, Pure	N	N
Acetonitrile	N	N
Acetophenone	N	N
Acetyl Chloride	N	N
Acrylic Acid	N	N
Acrylonitrile	N	N
Adipic Acid, sat'd in water	R	200°F (93°C)
Allyl Alcohol	R	200°F (93°C)
Allyl Chloride	N	N
Alum, all varieties	R	200°F (93°C)
Aluminum Acetate	R	200°F (93°C)
Aluminum Chloride	R	200°F (93°C)
Aluminum Fluoride	R	200°F (93°C)
Aluminum Hydroxide	R	200°F (93°C)
Aluminum Nitrate	R	200°F (93°C)
Aluminum Sulfate	R	200°F (93°C)
Ammonia	N	N
Ammonium Acetate	R	200°F (93°C)
Ammonium Benzoate	R	200°F (93°C)
Ammonium Bifluoride	R	200°F (93°C)
Ammonium Carbonate	R	200°F (93°C)
Ammonium Chloride	R	200°F (93°C)
Ammonium Citrate	R	200°F (93°C)
Ammonium Dichromate	R	200°F (93°C)
Ammonium Fluoride	R	200°F (93°C)
Ammonium Hydroxide, 28%	N	N
Ammonium Hydroxide, 10%	N	N
Ammonium Hydroxide, 3%	R	N
Ammonium Nitrate	R	200°F (93°C)
Ammonium Persulfate	R	-

R – Recommended   N – Not Recommended   S – Satisfactory Resistance   E – Possible ESC   ☐ (blank) – Insufficient Data

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Ammonium Phosphate	R	S-180°F (82°C)
Ammonium Sulfamate	R	200°F (93°C)
Ammonium Sulfate	R	200°F (93°C)
Ammonium Sulfide	R	200°F (93°C)
Ammonium Thiocyanate	R	200°F (93°C)
Ammonium Tartrate	R	200°F (93°C)
Amyl Acetate	N	N
Amyl Alcohol	E	E-180°F (82°C)
Amyl Chloride	N	N
Aniline	N	N
Aniline Hydrochloride	-	-
Anthraquinone	R	R
Antimony Trichloride	R	200°F (93°C)
Aqua Regia	R	N
Arsenic Acid	R	-
Aryl Sulfonic Acid	R	180°F (82°C)
B		
Barium Carbonate	R	200°F (93°C)
Barium Chloride	R	200°F (93°C)
Barium Hydroxide	R	200°F (93°C)
Barium Nitrate	R	200°F (93°C)
Barium Sulfate	R	200°F (93°C)
Barium Sulfide	R	200°F (93°C)
Beer	R	200°F (93°C)
Beet Sugar Liquors	R	200°F (93°C)
Benzaldehyde	N	N
Benzene	N	N
Benzene Sulfonic Acid	R	180°F (82°C)
Benzoic Acid	R	180°F (82°C)
Benzyl Alcohol	E	E-180°F (82°C)
Benzyl Chloride	N	N
Bismuth Carbonate	R	200°F (93°C)
Black Liquor	R	200°F (93°C)
Bleach, Household (5% Cl)	R	200°F (93°C)
Bleach, Industrial (15% Cl)	R[3,4]	200°F (93°C)
Blood	R	200°F (93°C)

R – Recommended N – Not Recommended S – Satisfactory Resistance E – Possible ESC ☐ (blank) – Insufficient Data

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Borax	R	200°F (93°C)
Boric Acid	R	200°F (93°C)
Brine Acid	R	200°F (93°C)
Bromic Acid	R	–
Bromine	N	N
Bromine, aqueous, sat'd	R	200°F (93°C)
Bromobenzene	N	N
Bromotoluene	N	N
Butanol	E	E-180°F (82°C)
Butyl Acetate	N	N
Butyl Carbitol™	N	N
Butyl Cellosolve™	N	N
Butyl Phenol	R	–
Butyric Acid, up to 1%	R	180°F (82°C)
Butyric Acid, greater than 1%	E	E-180°F (82°C)
Butyric Acid, pure	N	N
C		
Cadmium Acetate	R	200°F (93°C)
Cadmium Chloride	R	200°F (93°C)
Cadmium Cyanide	R	200°F (93°C)
Cadmium Sulfate	R	200°F (93°C)
Calcium Acetate	R	200°F (93°C)
Calcium Bisulfide	R	200°F (93°C)
Calcium Bisulfite	R	200°F (93°C)
Calcium Carbonate	R	200°F (93°C)
Calcium Chlorate	R	200°F (93°C)
Calcium Chloride	R	200°F (93°C)
Calcium Hydroxide	R	200°F (93°C)
Calcium Hypochlorite	R[3,4]	200°F (93°C)
Calcium Nitrate	R	200°F (93°C)
Calcium Oxide	R	200°F (93°C)
Calcium Sulfate	R	200°F (93°C)
Cane Sugar Liquors	R	200°F (93°C)
Caprolactam	N	N
Caprolactone	N	N
Carbitol™	N	N

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Carbolic Acid	R	–
Carbon Dioxide	R[2]	200°F (93°C)
Carbon Disulfide	N	N
Carbon Monoxide	R[2]	200°F (93°C)
Carbon Tetrachloride	N	N
Carbonic Acid	R	200°F (93°C)
Castor Oil	E	E-180°F (82°C)
*Caustic Potash	R	180°F (82°C)
*Caustic Soda	R	180°F (82°C)
Cellosolve™, all types	N	N
Chloramine, aqueous	R	180°F (82°C)
Chloric Acid	R	180°F (82°C)
Chlorinated Water, (Hypochlorite)	R	200°F (93°C)
Chlorine, aqueous	S	S-180°F (82°C)
Chlorine, dry gas	S[2]	S
Chlorine, liquid	N	N
Chlorine, trace in air	R[2]	200°F (93°C)
Chlorine, wet gas	S[2]	S
Chlorine Dioxide, aqueous, sat'd	S	S-180°F (82°C)
Chloroacetic Acid	N	N
Chlorobenzene	N	N
Chloroform	N	N
Chromic Acid, 40% (Conc.)	R	180°F (82°C)
Chromium Nitrate	R	200°F (93°C)
Citric Acid	R	200°F (93°C)
Citrus Oils	N	N
Coconut Oil	E	E-180°F (82°C)
Coffee	–	–
Copper Acetate	R	200°F (93°C)
Copper Carbonate	R	200°F (93°C)
Copper Chloride	R	200°F (93°C)
Copper Cyanide	R	200°F (93°C)
Copper Fluoride	R	200°F (93°C)
Copper Nitrate	R	200°F (93°C)
Copper Sulfate	R	200°F (93°C)
Corn Oil	E	E-180°F (82°C)
Corn Syrup	R	200°F (93°C)
Cottonseed Oil	E	E-180°F (82°C)

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Creosote	N	N
Cresol	N	N
Crotonaldehyde	N	N
Cumene	N	N
Cyclohexane	R	-
Cyclohexanol	E	-
Cyclohexanone	N	N
D		
Decahydronaphthalene	R	-
Detergents	E	E-180°F (82°C)
Dextrin	R	200°F (93°C)
Dextrose	R	200°F (93°C)
Diacetone Alcohol	N	N
Dibutoxyethyl Phthalate	N	N
Dibutyl Phthalate	N	N
Dibutyl Ether	N	N
Dibutyl Sebacate	N	N
Dichlorobenzene	N	N
Dichloroethylene	N	N
Diesel Fuel	E	E-180°F (82°C)
Diethylamine	N	N
Diethyl Ether	N	N
Diglycolic Acid	R	R
Dill Oil	N	N
Dimethyl Hydrazine	N	N
Dimethyl Phthalate	N	N
Dimethylamine	N	N
Dimethylformamide	N	N
Dioctyl phthalate	N	N
Dioxane	N	N
Disodium Phosphate	R	200°F (93°C)
Distilled Water	R	200°F (93°C)

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
E		
EDTA, Tetrasodium-	R	200°F (93°C)
Ethanol, up to 5%	R	180°F (82°C)
Ethanol, greater than 5%	E	E-180°F (82°C)
Ethanol, pure	E	E-180°F (82°C)
Ethyl Acetate	N	N
Ethyl Acetoacetate	N	N
Ethyl Acrylate	N	N
Ethyl Benzene	N	N
Ethyl Chloride	N	N
Ethyl Chloroacetate	N	N
Ethyl Ether	N	N
Ethyl Formate	N	N
Ethyl Mercaptan	N	N
Ethyl Oxalate	N	N
Ethylene Bromide	N	N
Ethylene Chloride	N	N
Ethylene Chlorohydrin	N	N
Ethylene Diamine	N	N
Ethylene Glycol, up to 50%	R	180°F (82°C)
Ethylene Glycol, greater than 50%	E	E-180°F (82°C)
Ethylene Oxide	N	N
2-Ethylhexanol	E	E-180°F (82°C)
F		
Fatty Acids	E	E-180°F (82°C)
Ferric Chloride	R	200°F (93°C)
Ferric Hydroxide	R	200°F (93°C)
Ferric Nitrate	R	200°F (93°C)
Ferric Sulfate	R	200°F (93°C)
Ferrous Chloride	R	200°F (93°C)
Ferrous Hydroxide	R	200°F (93°C)
Ferrous Nitrate	R	200°F (93°C)
Ferrous Sulfate	R	200°F (93°C)
Fish Oil	E	E-180°F (82°C)
Fluoboric Acid	R	-
Fluorine Gas	N	N

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Fluorosilicic Acid, 30%	R	180°F (82°C)
Fluosilicic Acid	R	180°F (82°C)
Formaldehyde	N	N
Formic Acid, up to 25%	R	180°F (82°C)
Formic Acid, greater than 25%	E	N
Formic Acid, pure	N	N
Freons	N	N
Fructose	R	200°F (93°C)
Furfural	N	N
G		
Gallic Acid, aqueous	R	180°F (82°C)
Gasoline	N	N
Gelatine	R	200°F (93°C)
Glucose	R	200°F (93°C)
Glycerine	R	200°F (93°C)
Glycolic Acid	N	N
Glyoxal, aqueous	R	–
Green Liquor	R	200°F (93°C)
H		
Halocarbon Oils	N	N
Heptane	R	–
Hexane	R	–
Hexanol	E	E-180°F (82°C)
Hydrazine	N	N
Hydrobromic Acid	R	–
Hydrochloric Acid	R	180°F (82°C)
Hydrocyanic Acid	R	–
*Hydrofluoric Acid, 3%	R[3]	180°F (82°C)
*Hydrofluoric Acid, 48%	S[3]	S-180°F (82°C)
Hydrofluosilicic Acid, 30%	R	180°F (82°C)
*Hydrogen Peroxide, 30%	R1	180°F (82°C)
*Hydrogen Peroxide, 50%	R1	120
Hydrogen Sulfide, Aqueous	R	180°F (82°C)
Hydroquinone, aqueous	R	–
Hydroxylamine Sulfate	–	–
Hypochlorous Acid	S	S-180°F (82°C)

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
I		
Iodine, aqueous	R	–
Isobutyl Alcohol	E	E-180°F (82°C)
Isophorone	N	N
Isopropanol	E	E-180°F (82°C)
Isopropyl Acetate	N	N
Isopropyl Chloride	N	N
Isopropyl Ether	N	N
K		
Kerosene	N	N
Ketchup	R	200°F (93°C)
Kraft Liquors	R	200°F (93°C)
L		
Lactic Acid, 25%	R	200°F (93°C)
Lard Oil	E	E-180°F (82°C)
Lauryl Chloride	N	N
Lead Acetate	R	200°F (93°C)
Lead Chloride	R	200°F (93°C)
Lead Nitrate	R	200°F (93°C)
Lead Sulfate	R	200°F (93°C)
Lemon Oil	N	N
Ligroin	R	–
Limonene	N	N
Linoleic Acid	E	E-180°F (82°C)
Linseed Oil	E	E-180°F (82°C)
Lithium Bromide	R	200°F (93°C)
Lithium Chloride	R	200°F (93°C)
Lithium Hydroxide	R	–
Lithium Sulfate	R	200°F (93°C)

R – Recommended N – Not Recommended S – Satisfactory Resistance E – Possible ESC ☐ (blank) – Insufficient Data

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
M		
Magnesium Carbonate	R	200°F (93°C)
Magnesium Chloride	R	200°F (93°C)
Magnesium Citrate	R	200°F (93°C)
Magnesium Fluoride	R	200°F (93°C)
Magnesium Hydroxide	R	200°F (93°C)
Magnesium Nitrate	R	200°F (93°C)
Magnesium Oxide	R	200°F (93°C)
Magnesium Sulfate	R	200°F (93°C)
Maleic Acid, 50%	R	200°F (93°C)
Malic Acid	R	200°F (93°C)
Manganese Sulfate	R	200°F (93°C)
Mercuric Chloride	R	200°F (93°C)
Mercuric Cyanide	R	200°F (93°C)
Mercuric Sulfate	R	200°F (93°C)
Mercurous Nitrate	R	200°F (93°C)
Mercury	R	180°F (82°C)
Methane Sulfonic Acid	R	180°F (82°C)
Methanol, up to 10%	R	180°F (82°C)
Methanol, grater than 10%	E	E-180°F (82°C)
Methanol, Pure	N	N
Methyl Acetate	N	N
Methyl Chloride	N	N
Methyl Ethyl Ketone	N	N
Methyl Formate	N	N
Methyl Isobutyl Ketone	N	N
Methyl Isopropyl Ketone	N	N
Methyl Methacrylate	N	N
Methylamine	N	N
Methylene Bromide	N	N
Methylene Chloride	N	N
Methylene Chlorobromide	N	N
Methylene Iodide	N	N
Mineral Oil	R	-
Molasses	R	R
Monoethanolamine	N	N
Morpholine	N	N
Motor Oil	R	-
Muriatic Acid	R	180°F (82°C)

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
N		
Naphtha	R	–
Naphthalene	R	–
Nickel Acetate	R	200°F (93°C)
Nickel Chloride	R	200°F (93°C)
Nickel Nitrate	R	200°F (93°C)
Nickel Sulfate	R	200°F (93°C)
*Nitric Acid, up to 25%	R[1]	150°F (65°C)
*Nitric Acid, 25-35%	R[1]	130°F (54°C)
*Nitric Acid, 70%	R[1]	105°F (40°C)
Nitrobenzene	N	N
Nitroethane	N	N
Nitroglycerine	N	N
Nitromethane	N	N
Nitrous Acid	R	–
O		
Octane	R	–
1-Octanol	E	E-180°F (82°C)
Oils, Sour Crude	N	N
Oleum	N	N
Olive Oil	N	N
Oxalic Acid, Sat'd	R	170°F (76°C)
Oxygen	R2	180°F (82°C)
Ozonized Water	R	200°F (93°C)
P		
Palm Oil	E	E-180°F (82°C)
Paraffin	R	180°F (82°C)
Peanut Oil	E	E-180°F (82°C)
Peracetic Acid	N	N
Perchloric Acid, 10%	R	–
Phenol	R	–
Phenylhydrazine	N	N
Phosphoric Acid	R	180°F (82°C)
Phosphorus Pentoxide	R	–

R – Recommended N – Not Recommended S – Satisfactory Resistance E – Possible ESC ☐ (blank) – Insufficient Data

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Phosphorus Trichloride	N	N
Photographic Solutions	R	180°F (82°C)
Phthalic Acid	N	N
Picric Acid	N	N
Pine Oil	N	N
Plating Solutions	R	180°F (82°C)
Polyethylene Glycol	E	E-180°F (82°C)
Polyvinyl Alcohol	R	180°F (82°C)
Potash	R	200°F (93°C)
Potassium Acetate	R	200°F (93°C)
Potassium Bicarbonate	R	200°F (93°C)
Potassium Bichromate	R	200°F (93°C)
Potassium Bisulfate	R	200°F (93°C)
Potassium Bisulfite	R	200°F (93°C)
Potassium Borate	R	200°F (93°C)
Potassium Bromate	R	200°F (93°C)
Potassium Bromide	R	200°F (93°C)
Potassium Carbonate	R	200°F (93°C)
Potassium Chlorate	R	200°F (93°C)
Potassium Chloride	R	200°F (93°C)
Potassium Chromate	R	200°F (93°C)
Potassium Cyanate	R	200°F (93°C)
Potassium Cyanide	R	200°F (93°C)
Potassium Dichromate	R	200°F (93°C)
Potassium Ferricyanide	R	200°F (93°C)
Potassium Ferrocyanide	R	200°F (93°C)
Potassium Fluoride	R	200°F (93°C)
*Potassium Hydroxide	R	180°F (82°C)
Potassium Hypochlorite	R[3,4]	200°F (93°C)
Potassium Iodide	R	200°F (93°C)
Potassium Nitrate	R	200°F (93°C)
Potassium Perborate	R	180°F (82°C)
Potassium Perchlorate, sat'd	R	180°F (82°C)
Potassium Permanganate, sat'd	R	180°F (82°C)
Potassium Persulfate, sat'd	R	-
Potassium Phosphate	R	180°F (82°C)
Potassium Sulfate	R	200°F (93°C)
Potassium Sulfide	R	200°F (93°C)

R – Recommended N – Not Recommended S – Satisfactory Resistance E – Possible ESC ☐ (blank) – Insufficient Data

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Potassium Sulfite	R	200°F (93°C)
Potassium Tripolyphosphate	R	200°F (93°C)
Propanol, up to 0.5%	R	180°F (82°C)
Propanol, greater than 0.5%	E	E-180°F (82°C)
Propanol, pure	E	E-180°F (82°C)
Propargyl Alcohol	E	E-180°F (82°C)
Propionic Acid, up to 2%	R	180°F (82°C)
Propionic Acid, greater than 2%	E	E-180°F (82°C)
Propionic Acid, pure	N	N
Propyl Acetate	N	N
Propyl Bromide	N	N
Propylene Dichloride	N	N
Propylene Gycol, up to 35%	R	180°F (82°C)
Propylene Gycol, greater than 35%	E	E-180°F (82°C)
Propylene Oxide	N	N
Pyridine	N	N
Pyrogallol	R	-
Pyrrole	N	N
S		
Salicylaldehyde	N	N
Sea Water	R	200°F (93°C)
Silicic Acid	R	-
Silicone Oil	R	-
Silver Chloride	R	200°F (93°C)
Silver Cyanide	R	200°F (93°C)
Silver Nitrate	R	200°F (93°C)
Silver Sulfate	R	200°F (93°C)
Soaps	R	200°F (93°C)
Sodium Acetate	R	200°F (93°C)
Sodium Aluminate	R	200°F (93°C)
Sodium Arsenate	R	200°F (93°C)
Sodium Benzoate	R	200°F (93°C)
Sodium Bicarbonate	R	200°F (93°C)
Sodium Bichromate	R	200°F (93°C)
Sodium Bisulfate	R	200°F (93°C)
Sodium Bisulfite	R	201°F (93°C)

R – Recommended   N – Not Recommended   S – Satisfactory Resistance   E – Possible ESC   ☐ (blank) – Insufficient Data

CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Sodium Borate	R	200°F (93°C)
Sodium Bromide	R	200°F (93°C)
Sodium Carbonate	R	200°F (93°C)
Sodium Chlorate	R	200°F (93°C)
Sodium Chloride	R	200°F (93°C)
Sodium Chlorite	R	200°F (93°C)
Sodium Chromate	R	200°F (93°C)
Sodium Cyanide	R	200°F (93°C)
Sodium Dichromate	R	200°F (93°C)
Sodium Ferricyanide	R	200°F (93°C)
Sodium Ferrocyanide	R	200°F (93°C)
Sodium Fluoride	R	200°F (93°C)
Sodium Fluorosilicate	R	180°F (82°C)
Sodium Formate	R	200°F (93°C)
Sodium Hexametaphosphate – Saturated	R	180°F (82°C)
*Sodium Hydroxide	R	180°F (82°C)
Sodium Hypobromite	R	200°F (93°C)
Sodium Hypochlorite	R[3,4]	200°F (93°C)
Sodium Iodide	R	200°F (93°C)
Sodium Metabisulfite – Saturated	R	180°F (82°C)
Sodium Metaphosphate	R	200°F (93°C)
Sodium Nitrate	R	200°F (93°C)
Sodium Nitrite	R	200°F (93°C)
Sodium Palmitate	R	200°F (93°C)
Sodium Perborate	R	180°F (82°C)
Sodium Percarbonate, 15%	R	180°F (82°C)
Sodium Perchlorate	R	180°F (82°C)
Sodium Permanganate, 25%	R	180°F (82°C)
Sodium Phosphate	R	200°F (93°C)
Sodium Silicate	R	200°F (93°C)
Sodium Sulfate	R	200°F (93°C)
Sodium Sulfide	R	200°F (93°C)
Sodium Sulfite	R	200°F (93°C)
Sodium Thiosulfate	R	200°F (93°C)
Sodium Tripolyphosphate	R	200°F (93°C)
Soybean Oil	E	E-180°F (82°C)
Stannic Chloride	R	200°F (93°C)
Stannous Chloride	R	200°F (93°C)
Stannous Sulfate	R	200°F (93°C)
Starch	R	200°F (93°C)

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
Stearic Acid	R	–
Strontium Chloride	R	200°F (93°C)
Styrene	N	N
Succinic Acid		
Sugar	R	200°F (93°C)
Sulfamic Acid	R	180°F (82°C)
Sulfur	R	–
Sulfur Dioxide – Aqueous	R	–
*Sulfuric Acid, Fuming	N	N
*Sulfuric Acid, 98%	R[1]	125°F (51°C)
*Sulfuric Acid, 85%	R[1]	170°F (76°C)
*Sulfuric Acid, 80%	R	180°F (82°C)
*Sulfuric Acid, 50%	R	180°F (82°C)
*Sulfurous Acid	R	–
T		
Tall Oil	E	E-180°F (82°C)
Tannic Acid, 30%	R	–
Tartaric Acid	R	–
Tetraacetyl Ethylene Diamine, sat'd	R	180°F (82°C)
Tetrahydrofuran	N	N
Tetrahydronaphthalene	R	–
Tetrasodiumpyrophosphate	R	200°F (93°C)
Thionyl Chloride	N	N
Toluene	N	N
Tomato Juice	R	180°F (82°C)
Tributyl Citrate	N	N
Tributyl Phosphate	N	N
Trichloroacetic Acid	N	N
Trichloroethylene	N	N
Triethanolamine	N	N
Triethylamine	N	N
Trimethylpropane	R	–
Trisodium Phosphate	R	200°F (93°C)
Tung Oil	E	E-180°F (82°C)
Turpentine	N	N

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Chemical	Ambient Temp, 73°F (23°C)	Maximum Temp, °F (°C)
U		
Urea	N	N
Urine	R	200°F (93°C)
V		
Vegetable Oil	E	E-180°F (82°C)
Vinegar	R	200°F (93°C)
Vinyl Acetate	N	N
W		
Water, Deionized	R	200°F (93°C)
Water, Demineralized	R	200°F (93°C)
Water, Distilled	R	200°F (93°C)
Water, Salt	R	200°F (93°C)
Water	R	200°F (93°C)
Whiskey	R	200°F (93°C)
White Liquor	R	200°F (93°C)
Wine	R	200°F (93°C)
X		
Xylene	N	N
Z		
Zinc Acetate	R	200°F (93°C)
Zinc Carbonate	R	200°F (93°C)
Zinc Chloride	R	200°F (93°C)
Zinc Nitrate	R	200°F (93°C)
Zinc Sulfate	R	200°F (93°C)

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CORZAN CPVC
CHEMICAL RESISTANCE DATA

Special Notes:

1. The temperature of gray CPVC installed in direct sunlight can reach 175°F. This should be considered when establishing the maximum operating temperature of the system.

2. CPVC is not recommended for gas under pressure.

3. A silica-free grade of cement must be used.

4. Do not allow chemical to decompose inside closed off sections of piping as a dangerous overpressure situation could occur.

* To develop these recommendations, test data was reviewed in conjunction with field experience and information gathered from various sources to develop the recommendations shown. For industrial process piping applications, this testing comprised coupons of CPVC material immersed in the chemical and held at a constant temperature for 90 days. Resistance evaluations were made using weight gain and change in strength measurements following exposure. It should be noted that laboratory testing is by nature limited in scope and cannot possibly evaluate the effect of all potential variables on the performance of a complex operational piping system. Variations in pipe and fitting production quality, fluid composition, concentration, pressure and temperature; as well as system installation and maintenance can affect the life expectancy of any piping system, especially those carrying extremely corrosive chemicals such as peroxides or concentrated acids and caustics. The full hydrostatic pressure rating of the pipe may not apply to the entire range of temperature and concentration designated as recommended.

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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
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- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems
- PVC, CPVC, PP, PVCO, ABS, PVDF and PE pipe and fittings

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