

Marine & Offshore Technical

Chemical Resistance Data For CPVC Marine Pressure Piping



Chemical Resistance

This section is to provide information on the transport of various chemicals using CPVC thermoplastic piping materials. This information is compiled from commercially available industry sources. These recommendations are guidelines for use and the final decision regarding material suitability must rest with the end-user.

Please note that Spears® CPVC marine piping products can be classified into two basic applications, pressure systems and marine drainage systems. The chemical resistance tables in this section are for Pressure Piping.

CPVC thermoplastic piping products are resistant to corrosion typically encountered with metal systems and the effects of galvanic and electrochemical corrosion are non-existent since both of these materials are non-conductors.

Types of Chemical Attack on Plastics

In general, chemicals that affect plastics do so in one of two ways. One effect is chemical solvation or permeation; the other is direct chemical attack. In the case of solvation or permeation, physical properties may be affected, but the polymer molecule structure itself is not chemically changed, degraded or destroyed. In solvation or permeation, gas, vapor or liquid molecules pass through the polymer, typically without damaging the plastic material itself. If the chemical can be removed completely, the plastic is generally restored to its original condition. Direct chemical attack occurs when exposure to a chemical causes a chemical alteration of the polymer molecules. Direct chemical attack may cause profound, irreversible changes that cannot be restored by removal of the chemical.

Other Considerations

While the effect of each individual chemical is specific, some chemicals can be grouped into general categories based on similarities in chemical characteristics. CPVC is inert to most mineral acids, bases, salts and paraffinic hydrocarbons, and compares favorably to other non-metals in these chemical environments.

Generally, the resistance of a particular plastic to a specific chemical decreases with an increase in concentration. Also, the resistance of a particular plastic to a specific chemical generally decreases as temperature increases, generally decreases with increasing applied stress, and generally decreases where temperature or applied stress are varied or cycled. These effects can be greater overall in combination.

In some cases, combinations of chemicals may have a synergistic effect on a thermoplastic material where the individual chemicals do not. It cannot be assumed that an individual chemical's lack of effect would apply for combinations that include several chemicals. When the possible combined effect of several chemicals is unknown, the material should be tested in the complete chemical mixture(s) in question.

Caution Areas

- Chlorinated and aromatic hydrocarbons, esters, or ketones are not recommended for use with CPVC thermoplastic piping materials. Although the chemical resistance of CPVC compounds is similar, they are not always the same.
- Chemical compatibility of a piping system must also take into consideration the compatibility of all system components. This includes elastomers (gaskets, O-rings, etc), valves and valve components, as well as thread pastes, lubricants, cleaning and wetting agents (surfactants).
- Applications involving certain oils, surfactants, and greases may result in environmental stress cracking. Environmental stress cracking occurs when system components are subjected to an incompatible chemical in the presence of stress.
- Certain substances called out on the following pages reference chemicals in a gaseous state. These substances are not recommended for pressure service. They are shown to provide the chemical resistance of CPVC when coming into contact with these substances. (i.e. exposure to or immersion in these substances).
- The following chemical resistance data is based primarily on plastic material test specimens that have been immersed in the chemical, and to a lesser degree, on field-experience. In most cases, detailed information on the test conditions (such as exposure time), and on test results (such as change in weight, change in volume, and change in strength) is not available.

Refrigeration Condensate Drains

Polyol Ester oil, commonly called POE oil, is a type of Synthetic oil used to lubricate refrigeration compressors. POE oil is highly incompatible with CPVC piping resulting in subsequent leaking. POE can enter the condensate system if the refrigerant circuit is opened during repair work. POE oil is also hygroscopic and can pick up moisture from the surroundings. In such cases, condensates may easily contain POE oils. Plastic piping in hydronic heating systems can also occasionally fail because of chemical contamination by POE lubricant oil used in the heat-exchanger refrigerant. While leaks in the heat exchanger are rare, when a leak does occur, it can lead to almost immediate failure of the piping system owing to chemical attack by the POE oil lubricant in the refrigerant. Today, there is substantial information commercially available on materials used in compressors and refrigeration equipment. It is the designer and installers responsibility to insure that all equipment and operating conditions in the system show good compatibility with both refrigerants and lubricants. This includes but is not limited to different coatings, metals, seals, and plastic components including condensate drains.

DISCLAIMER OF LIABILITY

There are many variables beyond our control in the application of thermoplastic piping in chemical service. All statements made herein are offered in good faith and believed to be accurate at the time of its preparation, but are offered without any warranty, expressed or implied, by information sources or Spears® Manufacturing Company. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user.



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CHEMICAL REAGENT	CPVC Type IV, Grade 1 4120 (23447)		
	73°F	140°F	180°F
Acetaldehyde	NR	NR	NR
Acetamide	NR	NR	NR
Acetic Acid, 10%	R	R	R
Acetic Acid, 20%	NR	NR	NR
Acetic Acid, Glacial	NR	NR	NR
Acetic Acid, pure	NR	NR	NR
Acetic Anhydride	NR	NR	NR
Acetone, < 5%	R	R	R
Acetone, > 5%	NR	NR	NR
Acetyl Nitride	NR	NR	NR
Acetylene	C	C	C
Acrylic Acid	NR	NR	NR
Adipic Acid; sat. in water	R	R	R
Allyl Alcohol, 96%	C	C	C
Allyl Chloride	NR	NR	NR
Alum, all varieties	R	R	R
Aluminum Acetate	R	R	R
Aluminum Alum	R	R	R
Aluminum Chloride	R	R	R
Aluminum Fluoride	R	R	R
Aluminum Hydroxide	R	R	R
Aluminum Nitrate	R	R	R
Aluminum Oxylchloride	?	?	?
Aluminum Sulfate	R	R	R
Amines	NR	NR	NR
Ammonia (gas;dry)	NR	NR	NR
Ammonia (liquid)	NR	NR	NR
Ammonium Acetate	R	R	R
Ammonium Alum	R	R	R
Ammonium Bisulfate	R	R	R
Ammonium Carbonate	R	R	R
Ammonium Chloride	R	R	R
Ammonium Dichromate	R	R	R
Ammonium Fluoride, < 25%	R	R	R
Ammonium Fluoride, > 25%	R	R	R
Ammonium Hydroxide	NR	NR	NR
Ammonium Metaphosphate	R	R	R
Ammonium Nitrate	R	R	R
Ammonium Persulfate	R	?	?
Ammonium Phosphate	R	R	C
Ammonium Sulfate	R	R	R
Ammonium Sulfide	R	R	R
Ammonium Tartrate	R	R	R
Ammonium Thiocyanate	R	R	R
Amyl Acetate	NR	NR	NR
Amyl Alcohol	C	C	NR
Amyl Chloride	NR	NR	NR
Aniline	NR	NR	NR

CHEMICAL REAGENT	CPVC Type IV, Grade 1 4120 (23447)		
	73°F	140°F	180°F
Aniline Chlorohydrate	NR	NR	NR
Aniline Hydrochloride	NR	NR	NR
Anthraquinone	?	?	?
Anthraquinone Sulfonic Acid	?	?	?
Antimony Trichloride	R	R	R
Aqua Regia	R	NR	NR
Aromatic Hydrocarbons	NR	NR	NR
Arsenic Acid 80%	R	R	R
Arsenic Trioxide (powder)	R	NR	NR
Arylsulfonic Acid	?	?	?
Barium Carbonate	R	R	R
Barium Chloride	R	R	R
Barium Hydroxide 10%	R	R	R
Barium Nitrate	R	R	R
Barium Sulfate	R	R	R
Barium Sulfide	R	R	R
Beer	R	R	R
Beet Sugar Liquors	R	R	R
Benzaldehyde; 10%	NR	NR	NR
Benzaldehyde; > 10%	NR	NR	NR
Benzalkonium Chloride	NR	NR	NR
Benzene	NR	NR	NR
Benzoic Acid	R	C	NR
Benzyl Alcohol	NR	NR	NR
Benzyl Chloride	NR	NR	NR
Bismuth Carbonate	R	R	R
Black Liquor	R	R	R
Bleach (15% CL)	R	R	R
Borax	R	R	R
Boric Acid	R	R	R
Brine (acid)	R	R	R
Bromic Acid	R	R	R
Bromine Liquid	NR	NR	NR
Bromine Vapor 25%	NR	NR	NR
Bromine Water	?	?	?
Bromobenzene	NR	NR	NR
Bromotoluene	NR	NR	NR
Butadiene	C	C	C
Butane	C	C	C
Butanol: primary	C	C	C
Butanol: secondary	C	C	C
Butyl Acetate	NR	NR	NR
Butyl Carbitol	NR	NR	NR
Butyl Mercaptan	NR	NR	NR
Butyl Phenol	NR	NR	NR
Butyl Stearate	NR	NR	NR
ButylCellosolve	NR	NR	NR
Butyne Diol	?	?	?

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CHEMICAL REAGENT	CPVC Type IV, Grade 1 4120 (23447)		
	73°F	140°F	180°F
Butyric Acid < 1%	R	R	R
Butyric Acid > 1%	NR	NR	NR
Cadmium Acetate	R	R	R
Cadmium Chloride	R	R	R
Cadmium Cyanide	R	R	R
Cadmium Sulfate	R	R	R
Caffeine Citrate	R	R	R
Calcium Acetate	R	R	R
Calcium Bisulfide	R	R	R
Calcium Bisulfite	R	R	R
Calcium Bisulfite Bleach Liquor	R	R	R
Calcium Carbonate	R	R	R
Calcium Chlorate	R	R	R
Calcium Chloride	R	R	R
Calcium Hydroxide	R	R	R
Calcium Hypochlorite	R	R	R
Calcium Nitrate	R	R	R
Calcium Oxide	R	R	R
Calcium Sulfate	R	R	R
Camphor (crystals)	NR	NR	NR
Cane Sugar Liquors	R	R	R
Caprolactam	NR	NR	NR
Caprolactone	NR	NR	NR
Carbitol	NR	NR	NR
Carbon Dioxide	R	R	R
Carbon Dioxide (aqueous solution)	R	R	R
Carbon Disulfide	NR	NR	NR
Carbon Monoxide	R	R	R
Carbon Tetrachloride	NR	NR	NR
Carbonic Acid	R	R	R
Carene 500	?	?	?
Castor oil	C	C	C
Caustic Potash	R	R	R
Caustic Soda	R	R	R
Cellosolve	NR	NR	NR
Cellosolve Acetate	NR	NR	NR
Chloral Hydrate	NR	NR	NR
Chloramine	R	R	R
Chloric Acid up to 20%	R	R	R
Chloride Water	R	R	R
Chlorinated Solvents	NR	NR	NR
Chlorinated Water (Hypochlorite)	R	R	R
Chlorine (dry liquid)	NR	NR	NR
Chlorine (liquid under pressure)	NR	NR	NR
Chlorine Dioxide aqueous (sat'd 0.1%)	R	?	?

CHEMICAL REAGENT	CPVC Type IV, Grade 1 4120 (23447)		
	73°F	140°F	180°F
Chlorine Gas (dry)	NR	NR	NR
Chlorine Gas (wet)	NR	NR	NR
Chlorine Water (sat'd 0.3%)	R	R	R
Chlorine(trace in air)	R	R	R
Chloroacetic Acid	NR	NR	NR
Chloroacety Chloride	NR	NR	NR
Chlorobenzene	NR	NR	NR
Chloroform	NR	NR	NR
Chloropicrin	NR	NR	NR
Chlorosulfonic Acid	NR	NR	NR
Chlorox Bleach Solution	C	C	C
Chrome Alum	R	R	R
Chromic Acid 10%	R	R	R
Chromic Acid 40%	R	R	R
Chromic Acid 50%	?	?	?
Chromic Acid/Sulfuric Acid/water-50%/15%/35%	?	?	?
Chromic/Nitric Acid (15%/35%)	R	C	NR
ChromiumNitrate	R	R	R
Citric Acid	R	R	R
Citrus Oils	NR	NR	NR
Coconut Oil	NR	NR	NR
Copper Acetate	R	R	R
Copper Carbonate	R	R	R
Copper Chloride	R	R	R
Copper Cyanide	R	R	R
Copper Fluoride	R	R	R
Copper Nitrate	R	R	R
Copper Sulfate	R	R	R
Corn Oil	NR	NR	NR
Corn Syrup	R	R	R
Cottonseed Oil	NR	NR	NR
Creosote	NR	NR	NR
Cresylic Acid,50%	NR	NR	NR
Crotonaldehyde	NR	NR	NR
Crude Oil	NR	NR	NR
Cumene	NR	NR	NR
Cupric Fluoride	R	R	R
Cupric Sulfate	R	R	R
Cuprous Chloride	R	R	R
Cyclanones	?	?	?
Cyclohexane	NR	NR	NR
Cyclohexanol	NR	NR	NR
Cyclohexanone	NR	NR	NR
D.D.T. (Xylene Base)	NR	NR	NR
Desocyphehrine Hydrochloride	?	?	?
Detergents	C	C	C
Dextrin	R	R	R



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CHEMICAL REAGENT	CPVC Type IV - Grade 1 4120 (23447)		
	73°F	140°F	180°F
Dextrose	R	R	R
Diacetone Alcohol	C	?	?
Diazo Salts	?	?	?
Dibutoxy Ethyl Phthalate	NR	NR	NR
Dibutyl Phthalate	NR	NR	NR
Dibutyl Sebacate	NR	NR	NR
Dichlorobenzene	NR	NR	NR
Dichloroethylene	NR	NR	NR
Diesel Fuels	NR	NR	NR
Diethyl Ether	NR	NR	NR
Diethylamine	NR	NR	NR
Diglycolic Acid	NR	NR	NR
Dill Oil	NR	NR	NR
Dimethyl Hydrazine	NR	NR	NR
Dimethylamine	NR	NR	NR
Dimethylformamide	NR	NR	NR
Diethylphthalate	NR	NR	NR
Dioxane (1, 4)	NR	NR	NR
Disodium Phosphate	R	R	R
Distilled Water	R	R	R
EDTA Tetrasodium	R	R	R
Ethyl Ester (ethyl acrylate)	NR	NR	NR
Epsom Salt	R	R	R
Esters	NR	NR	NR
Ethanol > 5%	C	C	C
Ethanol up to 5%	R	R	R
Ethers	NR	NR	NR
Ethyl Acetate	NR	NR	NR
Ethyl Acrylate	NR	NR	NR
Ethyl Alcohol	C	C	C
Ethyl Chloride	NR	NR	NR
Ethyl Chloroacetate	NR	NR	NR
Ethyl Ether	NR	NR	NR
Ethylene Bromide	NR	NR	NR
Ethylene Chlorohydrin	NR	NR	NR
Ethylene Diamine	NR	NR	NR
Ethylene Dichloride	NR	NR	NR
Ethylene Glycol	C	C	C
Ethylene Oxide	NR	NR	NR
Fatty Acids	C	C	C
Ferric Acetate	R	R	R
Ferric Chloride	R	R	R
Ferric Hydroxide	R	R	R
Ferric Nitrate	R	R	R
Ferric Sulfate	R	R	R
Ferrous Chloride	R	R	R
Ferrous Hydroxide	R	R	R
Ferrous Nitrate	R	R	R

CHEMICAL REAGENT	CPVC Type IV Grade 1 4120 (23447)		
	73°F	140°F	180°F
Ferrous Sulfate	R	R	R
Fish Solubles	?	?	?
Fluorine Gas	NR	NR	NR
Fluorine Gas (wet)	NR	NR	NR
Fluoroboric Acid	?	?	?
Fluorosilicic Acid 25%	R	C	C
Formaldehyde	NR	NR	NR
Formic Acid < 25%	R	R	R
Formic Acid > 25%	C	?	NR
Freon 11	NR	NR	NR
Freon 113	NR	NR	NR
Freon 114	NR	NR	NR
Freon 12	NR	NR	NR
Freon 21	NR	NR	NR
Freon 22	NR	NR	NR
Fructose	R	R	R
Fruit juices & pulp	R	R	R
Furfural	NR	NR	NR
Gallic Acid	?	?	?
Gas (Coke Oven)	?	?	?
Gasoline	NR	NR	NR
Gasoline, HighOctane	NR	NR	NR
Gasoline Jet Fuel	NR	NR	NR
Glucose	R	R	R
Glycerine	R	R	R
Glycol	C	C	C
Glycol Ethers	NR	NR	NR
Glycolic Acid	?	?	?
Grape Sugar	R	R	R
Green Liquor	R	R	R
Halocarbon Oils	NR	NR	NR
Heptane	C	?	?
Hercolyn	?	?	?
Hexane	C	C	C
Hexanol, Tertiary	C	C	C
Hydrazine	NR	NR	NR
Hydrobromic Acid 20%	?	?	?
Hydrochloric Acid 10%	R	R	R
Hydrochloric Acid 30%	R	R	R
Hydrochloric Acid 36%	R	R	C
Hydrochloric Acid Concentrated	?	?	?
Hydrochloric Acid pickling	R	R	R
Hydrocyanic Acid	?	?	?
Hydrofluoric Acid 3%	R	?	?
Hydrofluoric Acid 48%	NR	NR	NR
Hydrofluoric Acid 50%	NR	NR	NR
Hydrofluoric Acid 70%	NR	NR	NR
Hydrofluorsilicic Acid 30%	R	?	C

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	73°F	140°F	180°F
Hydrogen	C	C	C
Hydrogen Peroxide 30%	R	?	?
Hydrogen Peroxide 90%	?	?	?
Hydrogen Phosphide	?	?	?
Hydrogen Sulfide	R	R	R
Hydroquinone	R	R	R
Hydroxylamine Sulfate	?	?	?
Hypochlorite (Potassium & Sodium)	R	R	R
Hypochlorous Acid	R	R	R
Iodine	R	R	R
Iodine Solution 10%	?	?	?
Isopropanol	C	C	C
Kerosene	C	C	C
Ketones	NR	NR	NR
Kraft Liquors	R	R	R
Lactic Acid 25%	R	R	R
Lactic Acid 80%	R	C	C
Lard Oil	C	C	C
Lauric Acid	C	C	C
Lauryl Chloride	NR	NR	NR
Lead Acetate	R	R	R
Lead Chloride	R	R	R
Lead Nitrate	R	R	R
Lead Sulfate	R	R	R
Lemon Oil	NR	NR	NR
Limonene	NR	NR	NR
Linoleic Acid	C	C	C
Linoleic Oil	C	C	C
Linseed Oil	NR	NR	NR
Liquors	?	?	?
Lithium Bromide	R	R	R
Lithium Sulfate	R	R	R
Lubricating Oils, ASTM#1	?	?	?
Lubricating Oils, ASTM#2	?	?	?
Lubricating Oils, ASTM#3	?	?	?
Lux Liquid	?	?	?
Machine Oil	C	C	C
Magnesium Carbonate	R	R	R
Magnesium Chloride	R	R	R
Magnesium Citrate	R	R	R
Magnesium Fluoride	R	R	R
Magnesium Hydroxide	R	R	R
Magnesium Nitrate	R	R	R
Magnesium Oxide	R	R	R
Magnesium Salts	R	R	R
Magnesium Sulfate	R	R	R
Maleic Acid 50%	R	R	R
Manganese Chloride	R	R	R

CHEMICAL REAGENT	CPVC Type IV, Grade 1 4120 (23447)		
	73°F	140°F	180°F
Manganese Sulfate	R	R	R
Mercural Ointment Blue 5%	?	?	?
Mercuric Chloride	R	R	R
Mercuric Cyanide	R	R	R
Mercuric Sulfate	R	R	R
Mercurous Nitrate	R	R	R
Mercury	R	R	R
Mercury Ointment Ammoniated	?	?	?
Methanol <10%	R	R	R
Methanol >10%	NR	NR	NR
Methoxyethyl Oleate	NR	NR	NR
Methyl Cellosolve	NR	NR	NR
Methyl Chloride	NR	NR	NR
Methyl Ethyl Ketone	NR	NR	NR
Methyl Formate	NR	NR	NR
Methyl Iso-Butyl Ketone	NR	NR	NR
Methyl Methacrylate	NR	NR	NR
Methyl Salicylate	NR	NR	NR
Methyl Sulfate	?	?	?
Methyl Sulfuric Acid	?	?	?
Methylamine	NR	NR	NR
Methylene Bromide	NR	NR	NR
Petroleum Liquifier	?	?	?
Petroleum Oils (Sour)	C	C	C
Phenol	R	R	R
Phenylhydrazine	NR	NR	NR
Phenylhydrazine Hydrochloride	NR	NR	NR
Phosgene, Gas	NR	NR	NR
Phosgene, Liquid	NR	NR	NR
Phosphoric Acid, up to 85%	R	R	R
Phosphorous Pentoxide	R	R	R
Phosphorous Trichloride	NR	NR	NR
Phosphorous, (Yellow)	R	R	R
Photographic Solutions: Dektal Developer	?	?	?
Photographic Solutions: DK #3	?	?	?
Photographic Solutions: Kodak Fixer	?	?	?
Photographic Solutions: Kodak Short Stop	?	?	?
Picric Acid	NR	NR	NR
Plating Solutions: Brass	R	R	R
Plating Solutions: Cadmium	R	R	R
Plating Solutions: Copper	R	R	R
Plating Solutions: Gold	R	R	R
Plating Solutions: Indium	R	R	R
Plating Solutions: Lead	R	R	R
Plating Solutions: Nickel	R	R	R
Plating Solutions: Rhodium	R	R	R
Plating Solutions: Silver	R	R	R
Plating Solutions: Tin	R	R	R



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	73°F	140°F	180°F
Plating Solutions: Zinc	R	R	R
Polyethylene Glycol	NR	NR	NR
Potash (Sat.Aq.)	R	R	R
Potassium Acetate	R	R	R
Potassium Alum	R	R	R
Potassium Amyl Xanthate	?	?	?
Potassium Bicarbonate	R	R	R
Potassium Bichromate	R	R	R
Potassium Bisulfate	R	R	R
Potassium Borate	R	R	R
Potassium Bromate	R	R	R
Potassium Bromide	R	R	R
Potassium Carbonate	R	R	R
Potassium Chlorate	R	R	R
Potassium Chloride	R	R	R
Potassium Chromate	R	R	R
Potassium Cyanate	R	R	R
Potassium Cyanide	R	R	R
Potassium Dichromate	R	R	R
Potassium Ethyl Xanthate	?	?	?
Potassium Ferricyanide	R	R	R
Potassium Ferrocyanide	R	R	R
Potassium Fluoride	R	R	R
Potassium Hydroxide	R	R	R
Potassium Hypochlorite	R	R	R
Potassium Iodide	R	R	R
Potassium Nitrate	R	R	R
Potassium Perborate	R	R	R
Potassium Perchlorate	R	R	R
Potassium Permanganate 10%	R	R	R
Potassium Permanganate 25%	R	R	C
Potassium Persulfate	R	?	?
Potassium Phosphate	R	R	R
Potassium Sulfate	R	R	R
Potassium Sulfide	R	R	R
Potassium Sulfite	R	R	R
Potassium Triphosphate	R	R	R
Propane	C	C	C
Propane Gas	C	C	C
Propanol 0.5%	R	?	R
Propanol > 0.5%	C	C	C
Propargyl Alcohol	C	C	C
Propionic Acid 2%	R	R	R
Propionic Acid > 2%	NR	NR	NR
Propylene Dichloride	NR	NR	NR
Propylene Glycol 25%	C	C	C
Propylene Propylene Glycol >25%	C	C	C
Propylene Oxide	NR	NR	NR
Pyridine	NR	NR	NR

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	73°F	140°F	180°F
Pyrogallol Acid	?	?	?
Rayon Coagulating Bath	?	?	?
Refinery Crudes	C	C	C
Rochelle Salts	R	R	R
Salicylic Acid	R	R	R
Santicizer	?	?	?
Sea Water	R	R	R
Selenic Acid	?	?	?
Sewage	R	R	R
Silicic Acid	R	?	?
Silicone Oil	R	?	?
Silver Chloride	R	R	R
Silver Cyanide	R	R	R
Silver Nitrate	R	R	R
Silver Sulfate	R	R	R
Soaps	R	R	R
Sodium Acetate	R	R	R
Sodium Alum	R	R	R
Sodium Arsenate	R	?	?
Sodium Benzoate	R	R	R
Sodium Bicarbonate	R	R	R
Sodium Bichromate	R	R	R
Sodium Bisulfate	R	R	R
Sodium Bisulfite	R	R	R
Sodium Borate	R	R	R
Sodium Bromide	R	R	R
Sodium Carbonate	R	R	R
Sodium Chlorate	R	R	R
Sodium Chloride	R	R	R
Sodium Chlorite	R	R	R
Sodium Chromate	R	R	R
Sodium Cyanide	R	R	R
Sodium Dichromate	R	R	R
Sodium Ferricyanide	R	R	R
Sodium Ferrocyanide	R	R	R
Sodium Fluoride	R	R	R
Sodium Formate	R	R	R
Sodium Hydroxide 50%	R	R	R
Sodium Hypobromite	R	R	R
Sodium Hypochlorite	R	R	R
Sodium Iodide	R	R	R
Sodium Metaphosphate	R	R	R
Sodium Nitrate	R	R	R
Sodium Nitrite	R	R	R
Sodium Perchlorate	R	R	R
Sodium Peroxide	R	R	R
Sodium Silicate	R	R	R
Sodium Sulfate	R	R	R
Sodium Sulfide	R	R	R

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C = Caution, actual testing suggested; suspect @ certain stress levels ? = Incomplete Data; actual testing required

CHEMICAL REAGENT	CPVC Type IV Grade 1 4120 (23447)		
	73°F	140°F	180°F
Sodium Sulfite	R	R	R
Sodium Thiosulfate	R	R	R
Sodium Tripolyphosphate	R	R	R
Sour Crude Oil	C	C	C
Soybean Oil	NR	NR	NR
Stannic Chloride	R	R	R
Stannous Chloride	R	R	R
Stannous Sulfate	R	R	R
Starch	R	R	R
Stearic Acid	R	?	?
Stoddards Solvent	C	C	C
Styrene	NR	NR	NR
Succinic Acid	R	R	R
Sugar	R	R	R
Sulfamic Acid	R	R	R
Sulfite Liquor	?	?	?
Sulfur	R	?	?
Sulfur Dioxide dry	R	R	R
Sulfur Dioxide wet	R	R	R
Sulfur Trioxide	R	R	R
Sulfuric Acid 70%	R	R	R
Sulfuric Acid 80%	R	R	R
Sulfuric Acid 85%	R	C	NR
Sulfuric Acid 90%	R	C	NR
Sulfuric Acid 98%	R	NR	NR
Sulfuric Acid Fuming	NR	NR	NR
Sulfuric Acid Pickling	R	R	R
Sulfurous Acid	?	?	?
Tall Oil	C	C	C
Tan Oil	?	?	?
Tannic Acid 30%	R	?	?
Tanning Liquors	?	?	?
Tartaric Acid	R	?	?
Terpenes	NR	NR	NR
Terpineol	NR	NR	NR
Tetraethyl Lead	?	?	?
Texanol	NR	NR	NR
Thionyl Chloride	NR	NR	NR
Thread Cutting Oil	C	C	C
Titanium Tetrachloride	?	?	?
Toluol or Toluene	NR	NR	NR
Transformer Oil	C	C	C
Tributyl Citrate	NR	NR	NR
Tributyl Phosphate	NR	NR	NR
Trichloroacetic Acid	NR	NR	NR
Trichloroethylene	NR	NR	NR
Triethanolamine	NR	NR	NR
Trilones	?	?	?
Trimethyl Propane	?	?	?

CHEMICAL REAGENT	CPVC Type IV Grade 1 4120 (23447)		
	73°F	140°F	180°F
Trimethylamine	?	?	?
Trisodium Phosphate	R	R	R
Turpentine	NR	NR	NR
Urea	R	R	R
Urine	R	R	R
Vaseline	?	?	?
Vegetable Oils	NR	NR	NR
Vinegar	R	R	R
Vinyl Acetate	NR	NR	NR
Water: Acid Mine	R	R	R
Water: Deionized	R	R	R
Water: Demineralized	R	R	R
Water: Distilled	R	R	R
Water: Fresh & Salt	R	R	R
Water: Swimming Pool	R	R	R
WD-40	C	C	C
Whiskey	R	R	R
White Liquor	R	R	R
Wines	R	R	R
Xylene or Xylol	NR	NR	NR
Zinc Acetate	R	R	R
Zinc Carbonate	R	R	R
Zinc Chloride	R	R	R
Zinc Nitrate	R	R	R
Zinc Sulfate	R	R	R