



Appendix A

Chemical Resistance Tables

Table A-1 Chemical resistance of PVC pressure water pipe

Chemical	73°F (23°C)	140°F (60°C)	Chemical	73°F (23°C)	140°F (60°C)
Acetaldehyde	N	N	Ammonia, liquid	N	N
Acetaldehyde, aq 40%			Ammonium fluoride, 25%	R	C
Acetamide			Ammonium salts, except fluoride	R	R
Acetic acid, 20%			Amyl acetate	N	N
Acetic acid, 80%			Amyl chloride	N	N
Acetic acid, glacial			Aniline	N	N
Acetic acid, vapor			Aniline chlorohydrate	N	N
Acetic anhydride	C	N	Aniline dyes	N	N
Acetone	—	—	Aniline hydrochloride	N	N
Acetylene	R	R	Anthraquinone	R	R
Adipic acid	R	C	Anthraquinone sulfonic acid	R	R
Alcohol, allyl	R	N	Antimony trichloride	R	R
Alcohol, benzyl	R	R	Aqua regia	C	N
Alcohol, butyl (2-butanol)	N	N	Arsenic acid, 80%	R	R
Alcohol, butyl (n-butanol)	N	N	Aryl-sulfonic acid	R	R
Alcohol, ethyl	C	C	Barium salts	R	R
Alcohol, hexyl	R	R	Beer	R	R
Alcohol, isopropyl (2-propanol)	R	C	Beet sugar liquor	N	R
Alcohol, methyl	N	N	Benzaldehyde, 10%	R	N
Alcohol, propyl (1-propanol)	R	R	Benzaldehyde, above 10%	N	N
Allyl chloride	N	N	Benzene (benzol)	N	N
Alums	R	R	Benzene sulfonic acid, 10%	R	R
Ammonia, aq	R	R	Benzene sulfonic acid, above 10%	N	N
Ammonia, gas	R	R	Benzoic acid	R	R

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Table A-1 Chemical resistance of PVC pressure water pipe (continued)

Chemical	73°F (23°C)	140°F (60°C)	Chemical	73°F (23°C)	140°F (60°C)
Black liquor paper	R	R	Chlorobenzyl chloride	N	N
Bleach, 5.5% active chlorine	R	R	Chloroform	N	N
Bleach, 12.5% active chlorine	R	R	Chlorosulfonic acid	R	N
Borax	R	R	Chromic acid, 10%	R	R
Boric acid	R	R	Chromic acid, 30%	R	C
Boron trifluoride	R	R	Chromic acid, 40%	R	C
Bromic acid	R	R	Chromic acid, 50%	N	N
Bromine, aq	R	R	Citric acid	R	R
Bromine, gas, 25%	R	R	Coconut oil	R	R
Bromine, liquid	N	N	Coke oven gas	R	R
Butadiene	R	R	Copper salts, aq	R	R
Butane	R	R	Corn oil	R	R
Butanediol	R	R	Corn syrup	R	R
Butantetrol (erythritol)	R	N	Cottonseed oil	R	R
Butyl acetate	N	N	Cresol	N	N
Butyl phenol	R	N	Cresylic acid, 50%	R	R
Butylene	R	R	Croton aldehyde	N	N
Butyric acid	R	N	Crude oil	R	R
Calcium hydroxide	R	R	Cyclohexane	N	N
Calcium hypochlorite	R	R	Cyclohexanol	N	N
Calcium salts, aq	R	R	Cyclohexanone	N	N
Can sugar liquors	R	R	Detergents, aq	R	R
Carbon bisulfide	N	N	Diazo salts	R	R
Carbon dioxide	R	R	Dibutyl phthalate	N	N
Carbon dioxide, aq	R	R	Dibutyl sebacate	N	N
Carbon monoxide	R	R	Dichloroethylene	N	N
Carbon tetrachloride	R	N	Diesel fuels	R	R
Casein	R	R	Diethyl amine	N	N
Castor oil	R	R	Diglycolic acid	R	R
Caustic potash (potassium hydroxide)	R	R	Dimethyl formamide	N	N
Caustic soda (sodium hydroxide)	R	R	Dimethylamine	R	R
Cellosolve	R	C	Diocetyl phthalate	N	N
Cellosolve acetate	R	—	Dioxane-1,4	N	N
Chloracetic acid	R	R	Disodium phosphate	R	R
Chloral hydrate	R	R	Ethers	N	N
Chloramine	R	—	Ethyl esters	N	N
Chloric acid, 20%	R	R	Ethyl halides	N	N
Chlorine, gas, dry	C	N	Ethylene glycol	R	R
Chlorine, gas, wet	N	N	Ethylene halides	N	N
Chlorine, liquid	N	N	Ethylene oxide	N	N
Chlorine water	R	R	Fatty acids	R	R
Chlorobenzene	N	N	Ferric salts	R	R

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Table A-1 Chemical resistance of PVC pressure water pipe (continued)

Chemical	73°F (23°C)	140°F (60°C)	Chemical	73°F (23°C)	140°F (60°C)
Fluoboric acid, 25%	R	R	Jet fuels, JP-4 and JP-5	R	R
Fluorine, dry gas	C	N	Kerosene	R	R
Fluorine, wet gas	C	N	Ketones	N	N
Fluosilicic acid	R	R	Kraft paper liquor	R	R
Formaldehyde	R	R	Lacquer thinners	C	N
Formic acid	R	N	Lactic acid, 25%	R	R
Freon-F11, F12, F113, F114	R	R	Lard oil	R	R
Freon-F21, F22	N	N	Lauric acid	R	R
Fruit juices and pulps	R	R	Lauryl chloride	R	R
Fuel oil	C	N	Lauryl sulfate	R	R
Furfural	N	N	Lead salts	R	R
Gallic acid	R	R	Lime sulfur	R	R
Gas, coal, manufactured	N	N	Linoleic acid	R	R
Gas, natural, methane	R	R	Linseed oil	R	R
Gasolines	C	C	Liqueurs	R	R
Gelatin	R	R	Liquors	R	R
Glue, animal	R	R	Lithium salts	R	R
Glycerine (glycerol)	R	R	Lubricating oils	R	R
Glycolic acid	R	R	Machine oil	R	R
Glycols	R	R	Magnesium salts	R	R
Green liquor, paper	R	R	Maleic acid	R	R
Heptane	R	R	Malic acid	R	R
Hexane	R	C	Manganese sulfate	R	R
Hydrazine	N	N	Mercuric salts	R	R
Hydrobromic acid, 20%	R	R	Mercury	R	R
Hydrochloric acid	R	R	Mesityl oxide	N	N
Hydrocyanic acid	R	R	Metallic soaps, aq	R	R
Hydrofluoric acid, 10%	R	C	Methane	R	R
Hydrofluoric acid, 60%	R	C	Methyl acetate	N	N
Hydrofluoric acid, 100%	R	C	Methyl bromide	N	N
Hydrogen	R	R	Methyl cellosolve	N	N
Hydrogen peroxide, 50%	R	R	Methyl chloride	N	N
Hydrogen peroxide, 90%	R	R	Methyl chloroform	N	N
Hydrogen sulfide, aq	R	R	Methyl cyclohexanone	N	N
Hydrogen sulfide, dry	R	R	Methyl methacrylate	R	—
Hydroquinone	R	R	Methyl salicylate	R	R
Hydroxylamine sulfate	R	R	Methyl sulfate	R	C
Hypochlorous acid	R	R	Methyl sulfonic acid	R	R
Iodine, alc	N	N	Methylene bromide	N	N
Iodine, aq, 10%	N	N	Methylene chloride	N	N
Iodine, in KI, 3%, aq	C	N	Methylene iodide	N	N

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Table A-1 Chemical resistance of PVC pressure water pipe (continued)

Chemical	73°F (23°C)	140°F (60°C)	Chemical	73°F (23°C)	140°F (60°C)
Milk	R	R	Perchloroethylene	C	C
Mineral oil	R	R	Petroleum, refined	R	R
Mixed acids (sulfuric and nitric)	C	N	Petroleum, sour	R	R
Mixed acids (sulfuric and phosphoric)	R	R	Phenol	C	N
Molasses	R	R	Phenylcarbinol	N	N
Monochlorobenzene	N	N	Phenylhydrazine	N	N
Monoethanolamine	N	N	Phenylhydrazine HCl	C	N
Motor oil	R	R	Phosgene, gas	R	C
Naphtha	R	R	Phosgene, liquid	N	N
Naphthalene	N	N	Phosphoric acid	R	R
Nickel salts	R	R	Phosphorus pentoxide	R	C
Nicotine	R	R	Phosphorus, red	R	R
Nicotinic acid	R	R	Phosphorus trichloride	N	N
Nitric acid, 0 to 50%	R	C	Phosphorus, yellow	R	C
Nitric acid, 60%	R	C	Photographic chemicals, aq	R	R
Nitric acid, 70%	R	C	Phthalic acid	C	C
Nitric acid, 80%	C	C	Picric acid	N	N
Nitric acid, 90%	C	N	Plating solutions, metal	R	C
Nitric acid, 100%	N	N	Potassium alkyl xanthates	R	N
Nitric acid, fuming	N	N	Potassium permanganate, 25%	C	C
Nitrobenzene	N	N	Potassium salts, aq	R	R
Nitroglycerine	N	N	Propane	R	R
Nitroglycol	N	N	Propylene dichloride	N	N
Nitropropane	C	C	Propylene glycol	R	R
Nitrous acid	R	C	Propylene oxide	N	N
Nitrous oxide, gas	R	C	Pyridine	N	N
Oils and fats	R	R	Pyrogalllic acid	C	C
Oils, vegetable	R	R	Rayon coagulating bath	R	R
Oleic acid	R	R	Salicylaldehyde	C	C
Oleum	N	N	Salicylic acid	R	R
Olive oil	C	—	Sea water	R	R
Oxalic acid	R	R	Selenic acid	R	R
Oxygen, gas	R	R	Sewage, residential	R	R
Ozone, gas	R	C	Silicic acid	R	R
Palmitic acid, 10%	R	R	Silicone oil	R	N
Palmitic acid, 70%	R	N	Silver salts	R	R
Paraffin	R	R	Soaps	R	R
Pentane	C	C	Sodium chlorate	R	C
Peracetic acid, 40%	R	N	Sodium chlorite	R	R
Perchloric acid, 10%	R	C	Sodium dichromate, acid	R	R
Perchloric acid, 70%	R	N	Sodium perborate	R	R

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Table A-1 Chemical resistance of PVC pressure water pipe (continued)

Chemical	73°F (23°C)	140°F (60°C)	Chemical	73°F (23°C)	140°F (60°C)
Sodium salts, aq	R	R	Titanium tetrachloride	C	N
Stannic chloride	R	R	Toluene	N	N
Stannous chloride	R	R	Tributyl citrate	R	—
Starch	R	R	Tributyl phosphate	N	N
Stearic acid	R	R	Trichloroacetic acid	R	R
Stoddard solvent	N	N	Trichloroethylene	N	N
Sugars, aq	R	R	Tricresyl phosphate	N	N
Sulfite liquor	R	R	Triethanolamine	R	C
Sulfur	R	R	Triethylamine	R	R
Sulfur dioxide, dry	R	R	Trimethyl propane	R	C
Sulfur dioxide, wet	R	C	Turpentine	R	R
Sulfur trioxide, gas, dry	R	R	Urea	R	R
Sulfur trioxide, wet	R	C	Urine	R	R
Sulfuric acid, up to 70%	R	R	Vaseline	N	N
Sulfuric acid, 70 to 90%	R	C	Vegetable oils	R	R
Sulfuric acid, 90 to 100%	C	N	Vinegar	R	R
Sulfurous acid	C	N	Vinyl acetate	N	N
Tall oil	R	R	Water, distilled	R	R
Tannic acid	R	R	Water, fresh	R	R
Tanning liquors	R	R	Water, mine	R	R
Tartaric acid	R	R	Water, salt	R	R
Terpineol	C	C	Water, tap	R	R
Tetrachloroethane	C	C	Whiskey	R	R
Tetraethyl lead	R	C	Wines	R	R
Tetrahydrofuran	N	N	Xylene	N	N
Thionyl chloride	N	N	Zinc salts	R	R
Thread cutting oils	R	—			

Source: PPI TR-19, Plastics Pipe Institute, 1275 K St., N.W., Suite 400, Washington, DC 20005.

Notes: R = generally resistant

C = less resistant than R, but still suitable for some conditions

N = not resistant

This table is provided to aid the designer in decisions regarding exposure to undiluted chemicals except where a diluted concentration is indicated.