

Chemical Resistance of PVC Products



The mechanism of chemical attack on thermoplastics in general, and PVC sheets in particular, differs significantly from the mechanism of corrosion of metals. Corrosion of metals results in a gradual loss of surface material as a result of electrolytic action by the relevant chemicals. Chemical attack on PVC sheet, where it occurs, consists generally of absorption of the chemical by the PVC sheet and its subsequent swelling. The chemical resistance behaviour of PVC sheets is therefore simple to determine. The chemical resistance is expressed in terms of weight change (usually an increase) and volume change.

The table that appears in the following pages lists the resistance of PVC sheets to a number of commonly encountered chemicals and other corrosive media at room temperature. (Information on chemical resistance at higher temperatures will be supplied upon request.) Where the chemical resistance varies with concentration, the results of tests at different concentrations is presented. The information listed is based on long-term laboratory tests and actual service installations.

It is important to note that PVC sheets are generally not recommended for use with acetone, ketones, ethers, and aromatic and chlorinated hydrocarbons.

The table on the following pages uses the following key:

R – Resistant

LR - Limited Resistance (gradual attack over time may occur)

N - Not Resistant (rapid attack or attack over short time period will occur)

Chemical Resistance of PVC Products

Chemical	Concentration %	Resistance	Chemical	Concentration %	Resistance
Acetaldehyde	100	N	Brine		R
Acetic Acid	80	R	Bromic Acid		R
Acetic Acid	100	LR	Bromine (Liquid)		N
Acetic Anhydride		N	Bromine (Water)		LR
Acetone		N	Bromine (Vapour)		R
Acrylonitrile		N	Bromobenzene		N
Acetylene		R	Butadiene		N
Ajax		R	Butane		N
Allyl Alcohol		LR	Butyl Acetate		N
Aluminium Chloride	Saturated	R	Butyl Alcohol		R
Aluminium Fluoride		R	Butyl Stearate		R
Aluminium Hydroxide		R	Butyric Acid		N
Aluminium Sulfate	Saturated	R	Calcium Chloride	Saturated	R
Ammonia (Gas)		R	Calcium Hydroxide		R
Ammonia (Liquid)		N	Calcium Hypochlorite		R
Ammonium Acetate		R	Calcium Nitrate		R
Ammonium Bifluoride		R	Calcium Sulfate		R
Ammonium Bisulfate		R	Camphor		R
Ammonium Chloride		R	Carbon Dioxide Gas		R
Ammonium Fluoride	25	LR	Carbon Disulphide		N
Ammonium Hydroxide	28	R	Carbon Monoxide		R
Ammonium Nitrate		R	Carbon Tetrachloride		N
Ammonium Sulfate	Saturated	R	Castor Oil		R
Ammonium Sulfide	Saturated	R	Caustic Potash (Potassium Hydroxide)	50	R
Amyl Acetate		N	Caustic Soda (Sodium Hydroxide)	50	R
Amyl Alcohol	Pure	LR	Chlorine Dioxide	15	R
Aniline		N	Chlorine Gas (Dry)		N
Antimony Trichloride		R	Chlorine Gas (Wet)		N
Aqua Regia (3 parts HCl:1 part HNO3)		N	Chlorine Water	2	R
Arsenic Acid	80	R	Chloroacetic Acid		R
Barium Chloride		R	Chlorobenzene		N
Barium Hydroxide		R	Chloroform		N
Barium Sulfate		R	Chrome Alum	Saturated	R
Barium Sulfide		R	Chromic Acid	10	R
Beer		R	Citric Acid	Saturated	R
Beer (Sugar Liquor)		R	Copper Fluoride		R
Benzaldehyde		LR	Copper Nitrate		R
Benzene		N	Copper Sulfate		R
Benzoic Acid		R	Com Syrup		R
Benzyl Alcohol		R	Cottonseed Oil		R
Bleach	12% Chlorine	R	Cresol		N
Boric Acid		R	Cresylic Acid	50	R
Brake Fluid		LR	Cupric Chloride	Saturated	R

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Cuprous Chloride	Saturated	R	Hydrogen		R
Cyclohexane		N	Hydrogen Peroxide	50	R
Cyclohexanol		N	Hydrogen Sulfide		R
Cyclohexanone		N	Iodine		N
Dextrose		R	Kerosene		R
Detergent (most)		R	Ketones		N
Diesel Fuel		R	Lactic Acid	20	R
Diethyl Ether (Ethyl Ether)		R	Laurel Chloride		R
Dimethyl Amine		N	Lead Acetate		R
Diocetyl Phthalate		N	Lead Chloride		R
Dioxane		N	Lead Nitrate		R
Ethanol (Ethyl Alcohol) & Water	All	R	Lead Sulfate		R
Ethanol (Ethyl Alcohol)	Pure	R	Linoleic Acid		R
Ethyl Acetate		N	Linoleic Oil		R
Ethyl Chloride		N	Linseed Oil		R
Ethylene Chlorohydrin		N	Lithium Bromide		R
Ethylene Dichloride		N	Lubricating Oil		R
Ethylene Glycol		R	Magnesium Carbonate		R
Fatty Acids		R	Magnesium Chloride		R
Ferric Acetate		R	Magnesium Hydroxide		R
Ferric Chloride	Saturated	R	Magnesium Sulfate		R
Ferric Nitrate		R	Maleic Acid		R
Ferric Sulfate		R	Malic Acid		R
Ferrous Chloride		R	Manganese Chloride		R
Ferrous Hydroxide		R	Manganese Sulfate		R
Ferrous Sulfate		R	Mercuric Chloride		R
Fluorine Gas		LR	Mercuric Nitrate		R
Fluorine Gas (Wet)		R	Mercuric Sulfate		R
Fluoroboric Acid		R	Mercury		R
Formaldehyde		LR	Methanol & Water	All	R
Formic Acid		R	Methanol (Methyl Alcohol)	Pure	R
Freon 11, 12, 113, 114		LR	Methyl Chloride		N
Fluosilicic Acid		R	Methyl Ethyl Ketone (MEK)		N
Fruit Juices & Pulp		R	Methylmethacrylate		R
Gasoline		R	Methyl Sulfate		LR
Glucose		R	Methyl Sulfuric Acid		R
Glycerine		R	Methylamine		N
Heptane		R	Methylene Bromide		N
Hexane		N	Methylene Chloride		N
Hydrazine		N	Methylene Chlorobromate		N
Hydrobromic Acid	20	R	Methylene Iodide		N
Hydrochloric Acid	35	R	Milk		R
Hydrofluoric Acid	70	LR	Mineral Oil		R

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Motor Oil		R	Propylene Oxide		N
Naphtha		R	Pyridene		N
Naphthalene		N	Pyrogallic Acid		R
Nickel Chloride		R	Salad Oil		R
Nickel Nitrate		R	Salicylic Acid		R
Nickel Sulfate		R	Selenic Acid		R
Nitric Acid	60	R	Silicic Acid		R
Nitrobenzene		N	Silver Cyanide		R
Nitroglycerine		N	Silver Nitrate		R
Nitrous Oxide		R	Silver Sulfate		R
Oleic Acid	Saturated	R	Sodium Acetate		R
Oxalic Acid		R	Sodium Benzoate		R
Oxygen		R	Sodium Bicarbonate		R
Ozone		R	Sodium Bichromate		R
Palmitic Acid		R	Sodium Bisulfate		R
Paracetic Acid	40	LR	Sodium Bisulfite		R
Perchloric Acid	70	LR	Sodium Carbonate		R
Phenol		N	Sodium Chlorate		R
Phosphoric Acid	85	R	Sodium Chloride		R
Phosphorous (Yellow)		R	Sodium Chlorite		N
Phosphorous Pentoxide		R	Sodium Cyanide		R
Phosphorous Trichloride		N	Sodium Dichromate		R
Photographic Chemicals		R	Sodium Ferricyanide		R
Prcric Acid		N	Sodium Ferrocyanide		R
Plating Solutions		R	Sodium Fluoride		R
Potassium Bichromate		R	Sodium Hydroxide	50	R
Potassium Bromate	Saturated	R	Sodium Hypochlorite	16% Chlorine	R
Potassium Chloride		R	Sodium Nitrate		R
Potassium Chlorate		R	Sodium Nitrite		R
Potassium Cyanide		R	Sodium Perchlorate		R
Potassium Dichromate		R	Sodium Peroxide		R
Potassium Ferricyanide		R	Sodium Sulfate		R
Potassium Fluoride		R	Sodium Sulfide		R
Potassium Hydroxide	50	R	Sodium Sulfite		R
Potassium Nitrate		R	Sodium Thiosulfate		R
Potassium Perborate		R	Stannic Chloride		R
Potassium Perchlorate		R	Stannous Chloride		R
Potassium Permanganate		R	Stearic Acid		R
Potassium Persulfate		R	Succinic Acid		R
Potassium Sulfate		R	Sugar	Saturated	R
Propane		R	Sulfur Dioxide (Dry Gas)		R
Propyl Alcohol (1 Propanol)	100	R	Sulfuric Acid	<80 (>80)	R (LR)
Propylene Dichloride		N	Sulfurous Acid		R

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Tannic Acid		R	Trisodium Phosphate		R
Tanning Liquors		R	Tuepentine		LR
Tartaric Acid		R	Urea		R
Tetraethyl Lead		R	Vasilene		N
Tetrahydrofuran		N	Vegetable Oils		R
Tetrasodium Pyrophosphate		R	Vinegar		R
Thionyl Chloride		N	Vinyl Acetate		N
Titanium Tetrachloride		R	Water (demineralised or sea)		R
Toluene		N	Wine or Whiskey		R
Trichloroacetic Acid		R	Xylene		N
Trichloroethylene		N	Zinc Chloride		R
Triethanolamine		R	Zinc Nitrate		R
Triethylamine		N	Zinc Sulfate		R
Trimethylamine		LR			