



Polycarbonate Environmental Resistance

Polycarbonate may be used in a diverse range of environmental conditions. However, as with any thermoplastic, some environmental conditions have proven to be detrimental to polycarbonate. Varying degrees of stress, strain and temperature may also alter the resistance of polycarbonate; consequently fabricated parts should be tested thoroughly under actual in-service conditions prior to final design.

POLYCARBONATE IS RESISTANT TO:

CHEMICALS

Amyl Alcohol	Heptane	Potassium Perchlorate
Aluminum Chloride	Hydrochloric Acid 10%	Potassium Permanganate
Aluminum Sulphate	Hydrogen Peroxide 30%	Potassium Persulphate
Ammonium Chloride	Hydrofluoric Acid 10%	Potassium Sulphate
Ammonium Nitrate	Isopropanol	Silicone Oil
Ammonium Sulphate	Lactic Acid 20%	Silver Nitrate
Antimony Trichloride	Magnesium Chloride	Sodium Bicarbonate
Arsenic Acid 20%	Magnesium Sulphate	Sodium Bisulphate
Butyl Alcohol	Manganese Sulphate	Sodium Carbonate
Calcium Nitrate	Mercuric Chloride	Sodium Chlorate
Chlorinated Lime Paste	Nickel Sulphate	Sodium Chloride
Chrome Alum	Nitric Acid 10%	Sodium Hypochlorite
Chromic Acid 20%	Nitric Acid 20%	Sodium Sulphate
Citric Acid 40%	Oleic Acid	Stannous Chloride
Copper Chloride	Oxalic Acid	Sulfur
Copper Sulphate	Pentane	Sulfuric Acid 10%*
Cuprous Chloride	Phosphoric Acid 10%	Sulfuric Acid 50%
Formic Acid 10%	Potassium Bromate	Tartaric Acid 30%
Formalin 30%	Potassium Bromide	Zinc Chloride
Glycerine	Potassium Nitrate	Zinc Sulphate

INDUSTRIAL PETROLEUM PRODUCTS

Axle Oil	Kerosene Refined	Transformer Oil
Compressor Oil	Oil Spindle Oil	Vacuum Pump Oil
Diesel Oil		

COMMON HOUSEHOLD MATERIALS

Beer	Joy Liquid Detergent	Rapeseed Oil Rum
Borax	Insulating Tape	Salad Oil
Cocoa Cement	Linseed Oil	Salt Solution 10%
Chocolate	Liquor	Soap (soft and hard)
Cod Liver Oil	Milk	Table Vinegar
Cognac Coffee	Mineral Water	Tincture of Iodine 5%
Detergents (nonionic and anionic)	Mustard	Tomato Juice
Fish Oil	Olive Oil	Vodka
Fruit Syrup	Onions	Washing Soap
Grapefruit Juice	Orange Juice	Water
Gypsum	Paraffin Oil	Wine

POLYCARBONATE HAS LIMITED RESISTANCE TO:

Anti-freeze	Ethylene Glycol	Nitric Acid (concentrate)
Calcium Chloride	Hydrochloric Acid (concentrate)	Sulfuric Acid (concentrate)
Cyclohexanol	Milk of lime (CaOH)	

POLYCARBONATE IS NOT RESISTANT TO:

Acetaldehyde	Caustic Potash Solution 5%	Nitrobenzene
Acetic Acid (concentrate)	Caustic Soda Solution 5%	Nitrocellulose Lacquer
Acetone	Chlorothene	Ozone
Acrylonitrile	Chlorobenzene	Phenol
Ammonia	Cutting Oils	Phosphorous Hydroxy Chloride
Ammonium Fluoride	Cyclo Hexanone	Phosphorous Trichloride
Ammonium Hydroxide	Cyclohexene	Propionic Acid
Ammonium Sulfide	Dimethyl Formamide	Sodium Sulfide
Benzene	Ethane Tetrachloride	Sodium Hydroxide
Benzoic Acid	Ethylamine	Sodium Nitrate
Benzyl Alcohol	Ethyl Ether	Tetradydronaphthalene
Brake Fluid	Ethylene Chlorohydrin	Thiophene
Bromobenzene	Formic Acid (concentrate)	Toluene
Butyric Acid	Freon (refrigerant & propellant)	Turpentine
Carbon Tetrachloride	Gasoline	Xylene
Carbon Disulfide	Lacquer Thinner	
Carbonic Acid	Methyl Alcohol	

POLYCARBONATE IS DISSOLVED BY:

Chloroform	Dioxane	Methylene Chloride
Cresol	Ethylene Dichloride	Pyridine

In general, polycarbonate has good resistance to water, organic and inorganic acids, neutral and acid salts and aliphatic and cyclic hydrocarbons. Alkalies, amines, ketones, esters and aromatic hydrocarbons attack polycarbonate. Solvents for polycarbonate are: methylene chloride, ethylene dichloride and dioxane.

This chemical and solvent resistant listing is intended to assist designers in determining whether polycarbonate can be used in certain environments. It is very important to test prototype parts under end-use conditions for final verification of performance. All data is based on 70°F and 0% strain.

Polycarbonate has good resistance to water up to approximately 150°F. Above this temperature, the effect of moisture is time-temperature related. Exposing polycarbonate to repeated steam cleaning or dish washing can create hydrolic crazing. The result can be a clouding of the surface and ultimately a loss of physical strength properties.