



MAKROLON[®] SHEET

Environmental Resistance

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

Makrolon sheet is resistant to:

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

Industrial Petroleum Products			
Axle Oil	Diesel Oil	Refined Oil	Transformer Oil
Compressor Oil	Kerosene	Spindle Oil	Vacuum Pump Oil

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



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Makrolon sheet has limited resistant to:

Anti-freeze Calcium	Cyclohexanol Ethylene Glycol	Hydrochloric Acid* Milk of lime (CaOH)	Nitric Acid* Sulfuric Acid*	*concentrated
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Makrolon sheet is not resistant to:

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

Makrolon sheet is dissolved by:

Chloroform	Cresol	Dioxane	Ethylene Dichloride	Methylene Chloride	Pyridine
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In general, Makrolon sheet has **good resistance** to water, organic and inorganic acids, neutral and acid salts and aliphatic and cyclic hydrocarbons. Alkalines, amines, ketones, esters and aromatic hydrocarbons **attack** Makrolon. **Solvents** for Makrolon are methylene chloride, ethylene dichloride and dioxane.

This chemical and solvent resistant listing is intended to assist designers in determining whether Makrolon sheet 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 70F and 0% strain.

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



Disclaimer

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