

# Geomembrane

## CHEMICAL RESISTANCE

### EPDM MEMBRANES

#### General Information

EPDM rubber have a good chemical resistance to the following groups of chemicals: Anorganic salts, Animal oils, Bases, Organic salts, Vegetable oils, Weak organic acids.

In general the chemical resistance to the following groups decreases as the number of C-atomes increases: Alcohols, Aldehydes, Amines, Esters, Ketones, Organic acids.

Arbitrary can be suggested that the chemical resistance of EPDM rubber diminishes to “Moderatly” or “Non-resistant” if the number of C-atoms of the chemical is higher than approximatly five.

The resistance to ethers and phenols can be rated as “Moderate”.

EPDM rubber is not resistant to: Halogenated hydrocarbons, Hydrocarbons, Mineral oils.

Of the utmost importance for the effect of chemicals on EPDM is: The contact time, The temperature, The pressure, The concentration of the chemical.

Especially if the chemical resistance is rated “Moderatly resistant” above factors are of exeptional importance.

The resistance rating given in the following table are valid at room temperature if not other temperature is stated.

	Resistant	Moderately Resistant	Non-Resistant
<i>Acetaldehyde</i>		X	
<i>Acetic acid 10-25 %</i>	X		
<i>Acetic acid 50-100 %</i>		X	
<i>Acetic anhydride</i>	X		
<i>Acetic acid glacial</i>		X	
<i>Acetylacetone</i>		X	
<i>Acetone</i>	X		
<i>Acetonitrile</i>	X		
<i>Acetylene</i>			X
<i>Acrylic acid</i>	X		
<i>Acrylonitrile</i>		X	
<i>Acrolein</i>		X	

	Resistant	Moderately Resistant	Non-Resistant
<i>Adipic acid</i>	X		
<i>Aluminium acetate</i>	X		
<i>Aluminium chlorate</i>	X		
<i>Aluminium chloride</i>	X		
<i>Aluminium fluoride</i>	X		
<i>Aluminium hydroxide</i>	X		
<i>Aluminium nitrate</i>	X		
<i>Aluminium oxide hydrate</i>	X		
<i>Aluminium phosphate</i>	X		
<i>Aluminium sulfate</i>	X		
<i>Allylchloride</i>			X
<i>Ammonia anhydrous</i>	X		
<i>Ammonium carbonate</i>	X		
<i>Ammonium chloride</i>	X		
<i>Ammonium fluoride</i>	X		
<i>Ammonium hydroxide</i>	X		
<i>Ammonium nitrate</i>	X		
<i>Ammonium ortophosphate</i>	X		
<i>Ammonium oxalate</i>	X		
<i>Ammonium sulfate</i>	X		
<i>Ammonium thiocyanate</i>	X		
<i>Amylacetate</i>	X		
<i>Amylalcohol</i>	X		
<i>Amylchloride</i>			X
<i>Aniline</i>	X		
<i>Animal oil</i>	X		
<i>Antimony chloride</i>	X		
<i>Antimony pentasuphide</i>	X		
<i>Antimony trisulphide</i>	X		
<i>Asphaltite</i>			X
<i>A.S.T.M. fuel A-B-C</i>			X
<i>A.S.T.M. oil 1-2-3</i>			X
<i>Aqua regia</i>			X
<i>Argon</i>	X		

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	Resistant	Moderately Resistant	Non-Resistant
<i>Arsenic acid</i>	X		
<i>Arsenic tri-oxide</i>	X		
<i>Arsenic tri-sulfide</i>	X		
<i>Barium chloride</i>	X		
<i>Barium hydroxide</i>	X		
<i>Barium oxide</i>	X		
<i>Barium peroxide</i>	X		
<i>Barium sulfate</i>	X		
<i>Barium sulfide</i>	X		
<i>Beer</i>	X		
<i>Benzalchloride</i>			X
<i>Benzaldehyde</i>	X		
<i>Benzene</i>			X
<i>Benzene sulfonic acid - 10 %</i>	X		
<i>Benzoic acid</i>	X		
<i>Bezoylchloride</i>			X
<i>Benzylalcohol</i>		X	
<i>Benzyl benzoate</i>	X		
<i>Bismuth carbonate</i>	X		
<i>Bisulphite solution</i>	X		
<i>Bitumen</i>	X		
<i>Borax solution</i>	X		
<i>Boric acid</i>	X		
<i>Bromic acid</i>	X		
<i>Bromine anhydrous liquid</i>			X
<i>Bromo benzene</i>			X
<i>Butadiene</i>			X
<i>Butane</i>			X
<i>Butanol</i>	X		
<i>Butanon (M.E.K.)</i>	X		
<i>Buttermilk</i>		X	
<i>Butylstearate</i>			X
<i>Butylacetate</i>		X	

	Resistant	Moderately Resistant	Non-Resistant
<i>Butylalcohol</i>	X		
<i>Butylaldehyde</i>		X	
<i>Butylamine</i>			X
<i>Butylbenzoat</i>	X		
<i>Butylchloride</i>			X
<i>Butylene</i>			X
<i>Butylether</i>			X
<i>Butylglycol</i>	X		
<i>Butyloleate</i>			X
<i>Butyric acid</i>		X	
<i>Butyraldehyde</i>		X	
<i>Cadmium sulfate</i>	X		
<i>Calcium</i>	X		
<i>Calciumcarbonate</i>	X		
<i>Calciumchloride</i>	X		
<i>Calciumcyanide</i>	X		
<i>Calciumhydroxide</i>	X		
<i>Calciumsulfate</i>	X		
<i>Calciumsulfide</i>	X		
<i>Calcium(bi)sulfite</i>	X		
<i>Calciumoxide</i>	X		
<i>Caproic acid</i>	X		
<i>Caprolactam 20-100 %</i>	X		
<i>Carbamide</i>	X		
<i>Carbitol</i>	X		
<i>Carbolic oil</i>		X	
<i>Carbondioxide</i>	X		
<i>Carbondisulfide</i>			X
<i>Carbonmonoxide</i>	X		
<i>Carbontetrachloride</i>			X
<i>Castor oil</i>		X	
<i>Cellulose acetate</i>	X		
<i>Cement</i>	X		

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	Resistant	Moderately Resistant	Non-Resistant
<i>Cetylalcohol</i>	X		
<i>Chlorine dry</i>	X		
<i>Chlorine wet</i>		X	
<i>Chlorine dioxide</i>	X		
<i>Chlorine water</i>			X
<i>Chloroacetic acid</i>	X		
<i>Chlorobenzene</i>			X
<i>Chlorodiphenyl</i>			X
<i>Chloroform</i>			X
<i>Chlorophenol</i>			X
<i>Chloroprene</i>			X
<i>Chlorosulfonic acid</i>			X
<i>Chronic acid 10-50 %</i>			X
<i>Chromium sulfate</i>	X		
<i>Chromium trioxide</i>	X		
<i>Citric acid</i>	X		
<i>Copper chloride</i>	X		
<i>Copper cyanide</i>	X		
<i>Copper hydroxide</i>	X		
<i>Copper nitrate</i>	X		
<i>Copper sulfate</i>	X		
<i>Cottonseed oil (20° C)</i>	X		
<i>Cottonseed oil (100° C)</i>		X	
<i>Cream butter</i>	X		
<i>Creosote oil</i>			X
<i>Cresol</i>		X	
<i>Cyanic acid</i>	X		
<i>Cyclohexane</i>			X
<i>Cyclohexene</i>			X
<i>Cyclohexanol</i>			X
<i>Cyclohexanone</i>			X
<i>Decalin</i>			X
<i>Dextrose</i>	X		

	Resistant	Moderately Resistant	Non-Resistant
<i>Diacetone alcohol</i>	X		
<i>Dibenzylether</i>	X		
<i>Dibutylphthalate</i>	X		
<i>Dichlorobenzene</i>			X
<i>Dichloroethylene</i>			X
<i>Dichloromethane</i>		X	
<i>Diesel oil</i>			X
<i>Diethanolamine</i>	X		
<i>Diethylamine</i>			X
<i>Diethylene glycol</i>	X		
<i>Diethylether</i>			X
<i>Diethylketon</i>	X		
<i>Diethylsebacate</i>		X	
<i>Dimethylamine</i>			X
<i>Dimethylaniline</i>	X		
<i>Dimethylether</i>			X
<i>Dimethylformamide</i>		X	
<i>Di-n-butylsebacate</i>	X		
<i>Diocetylphthalate</i>		X	
<i>Dioxane</i>	X		
<i>Diphenyl</i>			X
<i>Diphenylether</i>			X
<i>Dipropylene glycol</i>	X		
<i>Diphenyloxide</i>			X
<i>Dixan 2% solution</i>	X		
<i>Dowtherm A</i>			X
<i>Epichlorohydrin</i>		X	
<i>Ethane</i>			X
<i>Ethanolamine</i>	X		
<i>Ethylacetate</i>	X		
<i>Ethylacrylate</i>	X		
<i>Ethylalcohol</i>	X		
<i>Ethylbenzene</i>			X

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	Resistant	Moderately Resistant	Non-Resistant
<i>Ethylchloride</i>		X	
<i>Ethylene</i>			X
<i>Ethylenebromide</i>			X
<i>Ethylene diamine</i>		X	
<i>Ethylene dichloride</i>			X
<i>Ethylene glycol</i>	X		
<i>Ethylene glycoldiacetate</i>	X		
<i>Ethylether</i>			X
<i>Ethyl hexanol</i>	X		
<i>Ethyl mercaptan</i>			X
<i>Ethylene oxide</i>	X		
<i>Fatty acids</i>		X	
<i>Fatty alcohols</i>	X		
<i>Ferric chloride</i>	X		
<i>Fluoboric acid 65 %</i>	X		
<i>Fluosilicic acid 50 %</i>	X		
<i>Formaldehyde</i>	X		
<i>Formaline</i>	X		
<i>Formic acid (&lt;50%)</i>	X		
<i>Freon</i>			X
<i>Furfural</i>	X		
<i>Gallic acid</i>		X	
<i>Gasoline</i>			X
<i>Gelatin</i>	X		
<i>Glucose</i>	X		
<i>Glutamic acid</i>	X		
<i>Glycerol (glycerin)</i>	X		
<i>Glycerol monostearate</i>		X	
<i>Glycol</i>	X		
<i>Helium</i>	X		
<i>Heptane</i>			X
<i>Hexaldehyde</i>		X	
<i>Hexane</i>			X

	Resistant	Moderately Resistant	Non-Resistant
<i>Hexanol</i>		X	
<i>Hexylamine</i>		X	
<i>Hexylchloride</i>			X
<i>Hydrazine</i>	X		
<i>Hydrazine hydrate</i>	X		
<i>Hydrobromic acid</i>	X		
<i>Hydrochloric acid</i>	X		
<i>Hydrocyanic acid 20-90 %</i>	X		
<i>Hydroflouric acid 40 %</i>		X	
<i>Hydroflouric acid 75 %</i>			X
<i>Hydrogen</i>	X		
<i>Hydrogen peroxide 10-30%</i>	X		
<i>Hydrogen sulfide (dry+wet)</i>	X		
<i>Iodine</i>		X	
<i>Iron chloride</i>	X		
<i>Iron sulfate</i>	X		
<i>Iso butyl methylketon</i>	X		
<i>Iso octane</i>			X
<i>Isopropyl acetate</i>	X		
<i>Isopropyl alcohol</i>	X		
<i>Isopropylether</i>			X
<i>Kerosone</i>			X
<i>Lactic acid (milk acid)</i>	X		
<i>Lanolin</i>		X	
<i>Lauryl alcohol</i>		X	
<i>Lead acetate</i>	X		
<i>Lead arsenate</i>	X		
<i>Lead sulfate</i>	X		
<i>Linseed oil</i>		X	
<i>Lubrication oil</i>			X
<i>Magnesium chloride</i>	X		
<i>Magnesium hydroxide</i>	X		
<i>Magnesium silicate</i>	X		

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	Resistant	Moderately Resistant	Non-Resistant
<i>Magnesium silico fluoride</i>	X		
<i>Magnesium sulfate</i>	X		
<i>Magnesium sulfite</i>	X		
<i>Maleic acid</i>	X		
<i>Mercury</i>	X		
<i>Mercury chloride</i>	X		
<i>Mercury nitrate</i>	X		
<i>Metaldehyde</i>	X		
<i>Methane gas</i>	X		
<i>Methanol</i>	X		
<i>Methylacetate</i>	X		
<i>Methylamine</i>			X
<i>Methylchloride</i>			X
<i>Methylene chloride</i>		X	
<i>Methyl ethyl keton</i>	X		
<i>Methyl glycol</i>	X		
<i>Methyl glycol acetate</i>	X		
<i>Methyl-isobutylketone</i>		X	
<i>Mineral oil</i>			X
<i>Mixed nitrate and sulphuric acid</i>			X
<i>Molasses</i>	X		
<i>Monochloro ethylene</i>			X
<i>Mono ethanol amine</i>	X		
<i>Naphta</i>			X
<i>Naphtalene</i>			X
<i>Nickelsulphate</i>	X		
<i>Nitric acid 10 %</i>		X	
<i>Nitric acid 65-100 %</i>			X
<i>Nitric acid red funning</i>			X
<i>Nitrobenzene</i>		X	
<i>Nitrogen</i>	X		
<i>Nitrogenoxide</i>	X		
<i>Nitropropane</i>	X		

	Resistant	Moderately Resistant	Non-Resistant
<i>Nitrotoluene</i>			X
<i>Octane</i>			X
<i>Octanol</i>		X	
<i>Oleic acid</i>		X	
<i>Oleum</i>			X
<i>Olive oil</i>		X	
<i>Oxalic acid</i>	X		
<i>Oxygen</i>	X		
<i>Ozone</i>	X		
<i>Palmitic acid</i>		X	
<i>Palm oil</i>		X	
<i>Paraffinic oil and wax</i>		X	
<i>Pentane</i>			X
<i>Perchloric acid</i>		X	
<i>Perchloro ethylene</i>			X
<i>Perhydrol</i>	X		
<i>Petroleum</i>			X
<i>Phenol</i>			X
<i>Phenylchloride</i>			X
<i>Phosphoric acid 20-85 %</i>	X		
<i>Phosphorus oxychloride</i>	X		
<i>Phtalic acid</i>	X		
<i>Phtalic acid antihydride</i>	X		
<i>Picric acid</i>		X	
<i>Potassium acetate</i>	X		
<i>Potassium alum. sulphate</i>	X		
<i>Potassium borate</i>	X		
<i>Potassium bromide</i>	X		
<i>Potassium carbonate</i>	X		
<i>Potassium chlorate</i>	X		
<i>Potassium chloride</i>	X		
<i>Potassium chromium sulfate</i>	X		
<i>Potassium cyanide</i>	X		

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	Resistant	Moderately Resistant	Non-Resistant
Potassium dichromate	X		
Potassium hydroxide	X		
Potassium hypochlorite	X		
Potassium Iodide	X		
Potassium nitrate	X		
Potassium permanganate		X	
Potassium phosphate	X		
Potassium sulfate	X		
Potassium sulfite	X		
Propane (liquid and gas)			X
Propanol	X		
Propyl acetate	X		
Propyl amine			X
Propylene			X
Propylene chloride			X
Propylene glycol	X		
Propylene oxide	X		
Pyridine		X	
Salad oil		X	
Salicylic acid	X		
Seawater	X		
Silicic acid	X		
Salad oil		X	
Salicylic acid	X		
Seawater	X		
Silicic acid	X		
Silicone oil	X		
Skydrol	X		
Soap solution	X		
Sodium acetate	X		
Sodium borate	X		
Sodium(bi)carbonate	X		
Sodium chlorate	X		

	Resistant	Moderately Resistant	Non-Resistant
Sodium chloride	X		
Sodium cyanide	X		
Sodium dichromate	X		
Sodium fluoride	X		
Sodium fluo aluminate	X		
Sodium hydroxide 20-75 %	X		
Sodium hypochlorite 10-30 %	X		
Sodium iron cyanide	X		
Sodium meta phosphate	X		
Sodium nitrate	X		
Sodium nitrite	X		
Sodium peroxide	X		
Sodium orthophosphate	X		
Sodium silicate	X		
Sodium (bi) sulfate	X		
Sodium sulfide	X		
Sodium (bi) sulfite	X		
Sodium thiosulphate	X		
Soybean oil			X
Sorbic acid	X		
Starch (amyloextrin)	X		
Stearic acid		X	
Styrene			X
Sugar	X		
Sulfamic acid	X		
Sulfur 90 °C	X		
Sulfur dichloride			X
Sulfur dioxide (wet+dry)	X		
Sulfuric acid 10-75 %	X		
Sulfuric acid, fuming			X
Sulfurous acid 10-75 %			X
Sulfur trioxide		X	

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	Resistant	Moderately Resistant	Non-Resistant
<i>Tannic acid</i>	X		
<i>Tartaric acid</i>		X	
<i>Tetra chloro ethylene</i>			X
<i>Tetra hydro furan</i>			X
<i>Tetra hydro naphtalin</i>			X
<i>Toluene</i>			X
<i>Tributyl phosphate</i>		X	
<i>Trichloroethane</i>			X
<i>Tricresyl phosphate</i>		X	
<i>Tri ethanol amine</i>	X		
<i>Tri ethyl amine</i>			X
<i>Tri methyl amine</i>			X
<i>Tri sodium phosphate</i>	X		
<i>Turpentine</i>			X
<i>Vegetable oil and fat</i>	X		
<i>Vinyl acetate</i>	X		
<i>Vinyl chloride</i>			X
<i>Vinyl pyridine</i>			X
<i>Washing preparation (synth.)</i>	X		
<i>Water</i>	X		
<i>Wine</i>	X		
<i>Xylol</i>			X
<i>Zinc acetate</i>	X		
<i>Zinc dichloride</i>	X		
<i>Zinc sulfate</i>	X		