

Resistance to Chemical Reagents

MONARFLEX - BLACKLINE GEOMEMBRANES

The resistance list is categorized in 3 different levels:

S = Satisfactory

L = Limited

NS = Not Satisfactory

Sat.sol. = Saturated aqueous solution

Sol. = Aqueous solution at a concentration higher than 10%.

L and NS categories are likely, in practice, to occur diluted to such a degree that it does not affect the Geomembranes.

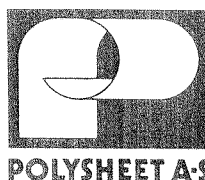
Chemical resistance is carried out on specimens not subjected to mechanical stress, in contact with fluids at 20° and 60° C.

Chemical or Product	Concentration	20°	60°	Chemical or Product	Concentration	20°	60°
Acetaldehyde	100%	L	NS	Chlorine, aqueous	Sat.sol	NS	NS
Acetic acid	10%	S	S	Chloroacetic acid	Sol	-	-
Acetic acid	60%	S	L	Chlorobenzene	100%	NS	NS
Acetic acid, glacial	Greater than 96%	L	NS	Chloroform	100%	NS	NS
Acetic anhydride	100%	L	NS	Chloromethane	100%	-	-
Acetone	100%	L	NS	Chloromethane, gas	100%	L	-
Adipic acid	Sat.sol	S	S	Chromic acid	Sat.sol	S	S
Allyl alcohol	100%	L	NS	Chromic acid	20%	-	-
Allyl alcohol	96%	-	-	Chromic acid	50%	-	-
Alums	Sol	S	S	Citric acid	Sat.sol	S	S
Aluminium chloride	Sat.sol	S	S	Copper (II) chloride	Sat.sol	S	S
Aluminium fluoride	Sat.sol	S	S	Copper (II) fluoride	Sat.sol	S	S
Aluminium sulphate	Sat.sol	S	S	Copper (II) nitrate	Sat.sol	S	S
Ammonia, dry gas	100%	S	S	Copper (II) sulphate	Sat.sol	S	S
Ammonia, liquid	100%	L	L	Cresylic acid			
Ammonia, aqueous	Dil.sol	S	S	(methyl benzoic acid)	Sat.sol	-	-
Ammonium chloride	Sats.sol	S	S	Crotonaldehyde	Sat.sol	L	-
Ammonium fluoride	Sol	S	-	Cyclohexanol	Sat.sol	L	NS
Ammonium nitrate	Sat.sol	S	S	Cyclohexanol	100%	-	-
Ammonium sulphate	Sat.sol	S	S	Cyclohexanone	100%	NS	NS
Ammonium sulphide	Sol	S	S				
Amyl acetate	100%	-	-	Decalin (decahydronaphthalene)	100%	-	-
Amyl alcohol	100%	L	L	Developers (photographic)	Work. conc	-	-
Amyl chloride	100%	NS	NS	Dextrin	Sol	S	S
Aniline	100%	-	-	Diethyl-ether	100%	NS	NS
Antimony (III) chloride	90%	-	-	Dimethyl amine	100%	NS	NS
Antimony trichloride	Sol	S	S	Diocetyl phthalate	100%	L	NS
Aqua regia	HCl/HNO ₃ =3/1	NS	NS	Dioxan	100%	-	-
Arsenic acid	Sat.sol	S	S				
				Ethanediol (ethylene glycol)	100%	S	S
Barium carbonate	Sat.sol	S	S	Ethanol	40%	S	L
Barium chloride	Sat.sol	S	S	Ethanol	96%	L	L
Barium hydroxide	Sat.sol	S	S	Ethyl acetate	100%	L	NS
Barium sulphate	Sat.sol	S	S				
Beer	-	S	S	Fluorine gas	100%	L	NS
Benzaldehyde	100%	L	NS	Florosilic acid	50%	S	S
Benzene	100%	NS	NS	Formaldehyde	40%	S	S
Benzoic acid Sat.sol	S	S	S	Formic acid	50%	-	-
Borax	Sat.sol	S	S	Formic acid	From 98 to 100%	S	S
Boric acid	Sat.sol	S	S	Furfuryl alcohol	100%	L	NS
Bromine, dry gas	100%	NS	NS				
Bromine, liquid	100%	NS	NS	Gasoline, petrol			
Butane, gas	100%	-	-	(aliphatic hydrocarbons)		L	NS
Butanol	100%	S	L	Glucose	Sat.sol	S	S
Butyric acid	100%	L	L	Glycol	100%	S	S
				Glycolic acid	30%	S	L
				Glycolic acid	Sol	-	-
Calcium carbonate	Sat.sol	S	S				
Calcium chlorate	Sat.sol	S	S	Heptane	100%	NS	NS
Calcium chloride	Sat.sol	S	S	Hydrobromic acid	50%	-	-
Calcium hydroxide	Sat.sol	S	S	Hydrobromic acid	Up to 100%	S	S
Calcium hypochlorite	Sol	S	S	Hydrochloric acid	Up to 36%	S	S
Calcium nitrate	Sat.sol	S	S	Hydrochloric acid	Conc	-	-
Calcium sulphate	Sat.sol	S	S	Hydrocyanic acid	10%	S	S
Calcium sulphide (hydro)	Sol	S	S	Hydrofluoric acid	4%	S	S
Calcium sulphide	Dil.sol	-	-	Hydrofluoric acid	60%	S	L
Carbon dioxide, dry gas	100%	-	-	Hydrogen	100%	S	S
Carbon dioxide, wet	-	S	S	Hydrogen peroxide	30%	S	L
Carbon disulphide	100%	NS	NS	Hydrogen peroxide	90%	S	NS
Carbon monoxide	100%	S	S	Hydrogen sulphide gas	100%	S	S
Carbon tetrachloride	100%	NS	NS	Hydroquinone	Sat.sol	S	S
Chlorine, dry gas	100%	NS	NS				

Chemical or Product	Concentration	20°	60°	Chemical or Product	Concentration	20°	60°
Iron (III) chloride	Sat.sol	S	S	Quinol (hydroquinone)	Sat.sol	S	S
Iron (III) nitrate	Sol	S	S	Salicylic acid	Sat.sol	S	S
Iron (III) sulphate	Sat.sol	S	S	Silver acetate	Sat.sol	S	S
Iron (II) chloride	Sat.sol	S	S	Silver cyanide	Sat.sol	S	S
Iron (II) sulphate	Sat.sol	S	S	Silver nitrate	Sat.sol	S	S
Lactic acid	100%	S	S	Sodium benzoate	Sat.sol	S	S
Lead acetate	Sat.sol	S	S	Sodium bromide	Sat.sol	S	S
Magnesium carbonate	Sat.sol	S	S	Sodium carbonate	Sat.sol	S	S
Magnesium chloride	Sat.sol	S	S	Sodium chlorate	Sat.sol	S	S
Magnesium hydroxide	Sat.sol	S	S	Sodium chloride	Sat.sol	S	S
Magnesium nitrate	Sat.sol	S	S	Sodium cyanide	Sat.sol	S	S
Maleic acid	Sat.sol	S	S	Sodium fluoride	Sat.sol	S	S
Mercury (II) chloride	Sat.sol	S	S	Sodium hexacyanoferrate (III)	Sat.sol	-	-
Mercury (II) cyanide	Sat.sol	S	S	Sodium hexacyanoferrate (II)	Sat.sol	-	-
Mercury (I) nitrate	Sol	S	S	Sodium hydrogen carbonate	Sat.sol	S	S
Mercury	100%	S	S	Sodium hydrogen sulphite	Sol	S	S
Milk		S	S	Sodium hydroxide	40%	S	S
Mineral oils		S	S	Sodium hydroxide	Sol	-	-
Molasses	Work.conc	S	S	Sodium hypochlorite	15%	-	-
Nickel chloride	Sat.sol	S	S	available Cl	-	-	S
Nickel nitrate	Sat.sol	S	S	Sodium nitrate	Sat.sol	S	S
Nickel sulphate	Sat.sol	S	S	Sodium nitrite	Sat.sol	S	S
Nicotinic acid	Dil.sol	L	L	Sodium orthophosphate	Sat.sol	S	S
Nitric acid	25%	S	S	Sodium sulphate	Sat.sol	S	S
Nitric acid	50%	-	-	Sodium sulphide	Sat.sol	S	S
Nitric acid	From 50 to 75%	L	NS	Sodium sulphite	Sat.sol	S	S
Nitric acid	75%	-	-	Stearic acid	Sat.sol	S	L
Nitric acid	100%	NS	NS	Sulphur dioxide, dry	100%	S	S
Oil and fats		L	NS	Sulphur trioxide	100%	NS	NS
Oleic acid	100%	L	NS	Sulphur acid	From 10 to 50%	S	S
Orthophosphoric acid	50%	S	S	10%	-	-	-
Orthophosphoric acid	95%	S	L	50%	-	-	-
Oxalic acid	Sat.sol	S	S	98%	L	NS	NS
Oxygen	100%	S	-	Sulphuric acid	Fuming	NS	NS
Ozone	100%	NS	NS	30%	S	S	S
Phenol	Sol	L	NS	Tannic acid	Sol	S	S
Phosphoric (III) chloride	100%	S	S	Tartaric acid	Sat.sol	S	S
Picric acid	Sat.sol	S	L	Tartaric acid	Sol	-	-
Potassium bromate	Sat.sol	S	S	Thionyl chloride	100%	NS	NS
Potassium bromide	Sat.sol	S	S	Tin (II) chloride	Sat.sol	S	S
Potassium carbonate	Sat.sol	S	S	Tin (IV) chloride	Sol	S	S
Potassium chlorate	Sat.sol	S	S	Tin (IV) chloroide	Sat.sol	-	-
Potassium chloride	Sat.sol	S	S	Toluene	100%	NS	NS
Potassium chromate	Sat.sol	S	S	Trichloroethylene	100%	NS	NS
Potassium cyanide	Sol	S	S	Triethanolamine	100%	S	-
Potassium dichromate	Sat.sol	S	S	Triethanolamine	Sol	-	-
Potassium hexacyanoferrate (III)	Sat.sol	S	S	Urea	Sol	S	S
Potassium hexacyanoferrate (II)	Sat.sol	S	S	Urine		S	S
Potassium fluoride	Sat.sol	S	S	Vegetable oils		S	L
Potassium hydrogen carbonate	Sat.sol	S	S	Vinegar		S	S
Potassium hydrogen sulphate	Sat.sol	S	S	Water		S	S
Potassium hydrogen sulphite	Sol	-	-	Wines and spirits		S	S
Potassium hydroxide	10%	S	S	Xylene	100%	NS	NS
Potassium hydroxide	Sol	S	S	Yeast	Sol	S	S
Potassium hypochlorite	Sol	S	L	Zinc carbonate	Sat.sol	-	-
Potassium nitrate	Sat.sol	S	S	Zinc chloride	Sat.sol	S	S
Potassium orthophosphate	Sat.sol	S	S	Zinc oxide	Sat.sol	S	S
Potassium perchlorate	Sat.sol	S	S	Zinc sulphate	Sat.sol	S	S
Potassium permanganate	20%	S	S				
Potassium persulphate	Sat.sol	S	S				
Potassium sulphate	Sat.sol	S	S				
Potassium sulphide	Sol	S	S				
Potassium sulphite	Sat.sol	S	S				
Propionic acid	50%	-	-				
Propionic acid	100%	-	-				
Pyridine	100%	-	-				

Source: Extracts from Laboratory tests carried out by NESTE Chemicals.

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