

Chemical Resistance Chart

This Chemical Resistance chart is to be used as a guide to assist you in determining the suitability of LLDPE for storing the chemical indicated. This chart is based on evaluations undertaken by our raw material suppliers, and are conducted in the absence of internal pressure and external mechanical stress.

Many chemicals can attack, degrade and cause swelling in LLDPE. Other agents (e.g. detergents, alcohols, oils etc) may cause cracking of the LLDPE especially when the part is under stress.

Bushmans industrial tanks have their physical properties evaluated and tested at the internationally accepted standard service temperature of 23°C. If the contents within the tank are expected to exceed this maximum temperature, advise your Bushman consultant, to determine a custom designed solution for your specific use.

The following key has been used in this table:

- indicates **satisfactory**, negligible attack
- indicates **some attack or absorption** (may be considered where alternative materials are unsatisfactory)
- I Indicates **unsatisfactory**, extensive attack (polyethylene should not be used for any applications where these environments are present).
- indicates **possibility of 'environmental stress cracking'**

Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard
		20°C	60°C	
Acetaldehyde	100	-	I	○
Acetic acid	10	●	●	
	60	●	●	●
	Glacial	-	I	●
Acetone	100	I	I	○
Alcohol, amyl		●		○
Alcohol, butyl		●		○
Alcohol, cetyl		●		○
Alcohol, ethyl	40	●		
	100	I		○
Alcohol, furfuryl		I		○
Alcohol, methyl	6	●		
	100	-		
Alum		●	●	
Aluminium chloride		●	●	

Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard
		20°C	60°C	
Aluminium fluoride		●	●	
Aluminium hydroxide		●	●	
Aluminium sulphate		●	●	
Ammonia	0.88 SG Dry gas	●	●	
Ammonium bicarbonate		●	●	
Ammonium carbonate		●	●	
Ammonium chloride		●	●	
Ammonium hydrosulphide		●	●	
Ammonium hydroxide		●	●	
Ammonium metaphosphate		●	●	
Ammonium nitrate		●	●	
Ammonium persulphate		●	●	
Ammonium phosphate		●	●	

NOTE:

- Information provided by Bushman Group Pty Ltd with respect to chemical resistance is to be used as a guide for application and is not to be taken as a guarantee of ultimate field performance.
- Satisfactory chemical resistance does not necessarily imply freedom from environmental stress cracking or chemical oxidation.
- The ultimate serviceability of a chemical tank is subject to factors outside of the control of Bushman Group Pty Ltd. These factors include additional inlet or outlet fittings or equipment, installation, operating conditions and environment which may all compromise the supplied product.
- This data is supplied in good faith and is not the result of evaluations conducted by Bushman Group Pty Ltd.

Bushmans Industrial... the Practical Solution.

Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard	Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard
		20°C	60°C				20°C	60°C	
Ammonium sulphide	100	●	●	○	Chloral hydrate	Dry gas Liquid 2 Sat. solution			○
Ammonium thiocyanate		●	●		Chlorine		-		
Amyl acetate					Chlorine water		●	●	
Aniline					Chloroform	Plating solution			
Aniline hydrochloride					Chlorosulphonic acid				
Aniline sulphate					Chrome alum		●	●	
Animal oils		-			Chronic acid		●	●	
Antimony pentachloride		●	●		Cider	All conc.	●	●	
Antimony trichloride		●	●		Citric acid		●	●	
"Arcton" 6		-			Copper chloride		●	●	
Barium carbonate	Dry gas	●	●	○	Copper cyanide		●	●	
Barium chloride		●	●		Copper fluoride		●	●	
Barium hydroxide		●	●		Copper nitrate		●	●	
Barium sulphate		●	●		Copper sulphate		●	●	
Barium sulphide		●	●		Creosote				
Beer		●	●		Cresols				
Benzaldehyde					Cresylic acid (crude)				
Benzene					Cupric chloride		●	●	
Benzene sulphonic acid					Cupric nitrate		●	●	
Benzyl alcohol					Cupric sulphate		●	●	
Bismuth carbonate	Dry gas	●	●	○	Cyclohexanol				
Borax		●	●		Cyclohexanone				
Boric acid		●	●		Detergents, synthetic (normal user conditions)		●	●	
Boron trifluoride		●	●		Developers, photographic		●	●	
Brine		●	●		Dextrose		●	●	
Bromine					Dibutyl phthalate	All conc.	-		
Calcium bisulphite		●	●		Diethyl ether		-		
Calcium carbonate		●	●		Diethyl phthalate		-		
Calcium chlorate		●	●		Disodium phosphate		●	●	
Calcium chloride		●	●		Emulsifiers	All conc.	●	●	
Calcium hydroxide	Dry gas	●	●	○	Emulsions, photographic		●	●	
Calcium hypochlorite		●	●		Ether				
Calcium nitrate		●	●		Ethyl acetate		-		
Calcium phosphate		●	●		Ethylene dichloride	All conc.			
Calcium sulphate		●	●		Ethylene glycol		●	●	
Camphor oil					Ferric chloride		●	●	
Carbon dioxide		●	●		Ferric sulphate		●	●	
Carbon disulphide									
Carbon monoxide		●	●						
Carbon tetrachloride									
Castor oil									

NOTE:

- Information provided by Bushman Group Pty Ltd with respect to chemical resistance is to be used as a guide for application and is not to be taken as a guarantee of ultimate field performance.
- Satisfactory chemical resistance does not necessarily imply freedom from environmental stress cracking or chemical oxidation.
- The ultimate serviceability of a chemical tank is subject to factors outside of the control of Bushman Group Pty Ltd. These factors include additional inlet or outlet fittings or equipment, installation, operating conditions and environment which may all compromise the supplied product.
- This data is supplied in good faith and is not the result of evaluations conducted by Bushman Group Pty Ltd.

Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard
		20°C	60°C	
Ferrous ammonium citrate		●	●	
Ferrous sulphate		●	●	
Fixing solution, photographic		●	●	
Fluorine		-		
Fluorsilicic acid		●	●	
Formaldehyde	40	●	●	
Formic acid	3	●	●	
	10	●	●	
	25	●	●	
	50	●	●	
	100	●	●	
Fruit pulp		●	●	
Furfuryl alcohol				
Glucose		●	●	
Glycerine		●	●	
Grape sugar		●	●	
Hydrobromic acid	50	●	●	
	100	●	●	
Hydrochloric acid	10	●	●	
	22	●	●	
	Conc.	●	●	
Hydrofluoric acid	4	●	●	
	40	●	●	
	50	●	●	
	Conc.	●	-	
Hydrogen		●	●	
Hydrogen peroxide	3 (10 vol.)	●	●	
	12 (40 vol.)	●	●	
	30 (100 vol.)	●	●	
	90 and above	●	●	
Hydrogen sulphide		●	●	
Hydroquinone		●	●	
Hypochlorous acid		-		
Lactic acid	10	●	●	
	100	●	●	
Lead acetate		●	●	
Lead arsenate		●	●	
Lead tetra-ethyl		●	●	
Linseed oil		-		○
Magnesium carbonate		●	●	
Magnesium chloride		●	●	
Magnesium hydroxide		●	●	
Magnesium nitrate		●	●	
Magnesium sulphate		●	●	
Maleic acid	25	●	●	
	50	●	●	
	Conc.	●	●	
Magnesium sulphate		●	●	
Mercuric chloride		●	●	
Mercuric cyanide		●	●	
Mercury		●	●	
Metallic soaps		●	●	○
Methyl acetate				
Methyl bromide		-		
Methyl chloride				
Methyl ethyl ketone		-		○
Milk		●	●	
Mineral oils		-		○
Monochlorobenzene				
Nickel chloride		●	●	
Nickel nitrate		●	●	
Nickel sulphate		●	●	
Nitric acid	5	●	●	Oxidising agent
	10	●	●	
	25	●	●	" "
	50	-		" "
	70	-		" "
	95			" "
Nitrobenzene		-		○
Oxalic acid		●	●	
Oxygen		●	●	
Paraffin		-		
Petrol				
Petroleum ether				
Phenol				○
Phosphoric acid	25	●	●	
	30	●	●	
	50	●	●	
	95	-		
Phosphorus oxychloride				

NOTE:

- Information provided by Bushman Group Pty Ltd with respect to chemical resistance is to be used as a guide for application and is not to be taken as a guarantee of ultimate field performance.
- Satisfactory chemical resistance does not necessarily imply freedom from environmental stress cracking or chemical oxidation.
- The ultimate serviceability of a chemical tank is subject to factors outside of the control of Bushman Group Pty Ltd. These factors include additional inlet or outlet fittings or equipment, installation, operating conditions and environment which may all compromise the supplied product.
- This data is supplied in good faith and is not the result of evaluations conducted by Bushman Group Pty Ltd.

Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard	Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard
		20°C	60°C				20°C	60°C	
Phosphorus pentoxide	1 10% w./ alcohol	●	●		Silver cyanide	1 10 40 Conc. 15% chlorine	●	●	○
Phosphorus trichloride		●			Silver nitrate		●	●	
Photographic developers		●	●		Soap solution		●	●	
Photographic emulsions		●			Sodium acetate		●	●	
Photographic fixing		●			Sodium aluminate		●	●	
Solutions		●	●		Sodium benzoate		●	●	
Picric acid		●			Sodium bicarbonate		●	●	
		●			Sodium bisulphate		●	●	
		●			Sodium bisulphite		●	●	
Potassium bicarbonate		●	●		Sodium borate		●	●	
Potassium bichromate		●	●	○	Sodium bromide	25 Conc.	●	●	○
Potassium bisulphate		●	●		Sodium carbonate		●	●	
Potassium bisulphite		●	●		Sodium chlorate		●	●	
Potassium borate		●	●		Sodium chlorite		●	●	
Potassium bromate		●	●		Sodium cyanide		●	●	
Potassium bromide		●	●		Sodium ferricyanide		●	●	
Potassium carbonate		●	●		Sodium ferrocyanide		●	●	
Potassium chlorate		●	●		Sodium fluoride		●	●	
Potassium chloride		●	●		Sodium hydroxide		●	●	
Potassium chromate		●	●		Sodium hyposulphates		●	●	
Potassium cuprocyanide	1 10 Conc.	●	●	○	Sodium hypochlorite	15% chlorine	●	●	○
Potassium cyanide		●	●		Sodium metaphosphate		●	●	
Potassium dichromate		●	●		Sodium nitrate		●	●	
Potassium ferricyanide		●	●		Sodium nitrite		●	●	
Potassium ferrocyanide		●	●		Sodium peroxide		●	●	
Potassium fluoride		●	●		Sodium phosphate		●	●	
Potassium hydroxide		●	●		Sodium silicate		●	●	
		●	●		Sodium sulphate		●	●	
Potassium nitrate		●	●		Sodium sulphide		●	●	
Potassium perborate		●	●		Sodium sulphite		●	●	
Potassium permanganate		●	●	○	Sodium thiosulphate	25 Conc.	●	●	○
Potassium persulphate		●	●		Soft soap		●	●	
Potassium phosphate		●	●		Stannic chloride		●	●	
Potassium sulphate		●	●		Stannous chloride		●	●	
Potassium sulphide		●	●		Starch		●	●	
Potassium thiosulphate		●	●		Stearic acid		●	●	
Salicylic acid		●	●						
Sea water		●	●						
Silicone fluids		-							

NOTE:

- Information provided by Bushman Group Pty Ltd with respect to chemical resistance is to be used as a guide for application and is not to be taken as a guarantee of ultimate field performance.
- Satisfactory chemical resistance does not necessarily imply freedom from environmental stress cracking or chemical oxidation.
- The ultimate serviceability of a chemical tank is subject to factors outside of the control of Bushman Group Pty Ltd. These factors include additional inlet or outlet fittings or equipment, installation, operating conditions and environment which may all compromise the supplied product.
- This data is supplied in good faith and is not the result of evaluations conducted by Bushman Group Pty Ltd.

Bushmans Industrial... the Practical Solution.

Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- mental cracking hazard	Chemical	Concentration (% by weight in aqueous solution)	Temperature		Environ- Mental cracking Hazard
		20°C	60°C				20°C	60°C	
Sucrose		●	●		Toluene				
Sulphur	Colloidal	●			Transformer oil		H		○
Sulphur dioxide	Dry gas	●			Trichloroethylene				○
	Moist	●			Tricresyl phosphate				○
Sulphuric acid	10	●	●		Triethanolamine		-		○
	20	●	●		Trisodium phosphate		●	●	
	30	●	●		Turpentine		-		○
	40	●	●		Vegetable oils		-		○
	50	●	●		Vinegar		●	●	
	60	●	●		Water		●	●	
	70	●	-		Wetting agents	Normal dilutions	●	●	○
	95	-			Whey		●		
	98	-			Wines and spirits		●		
Surface-active agents (Emulsifiers, synthetic detergents and wetting agents)	Fuming				Xylene				○
	Normal dilutions	●	●	○	Yeast		●		
Tallow		●			Zinc chloride		●	●	
Tannic acid		●	●		Zinc oxide		●	●	
Tanning extracts		●	●		Zinc sulphate		●	●	
Tartaric acid	10	●	●						

NOTE:

- Information provided by Bushman Group Pty Ltd with respect to chemical resistance is to be used as a guide for application and is not to be taken as a guarantee of ultimate field performance.
- Satisfactory chemical resistance does not necessarily imply freedom from environmental stress cracking or chemical oxidation.
- The ultimate serviceability of a chemical tank is subject to factors outside of the control of Bushman Group Pty Ltd. These factors include additional inlet or outlet fittings or equipment, installation, operating conditions and environment which may all compromise the supplied product.
- This data is supplied in good faith and is not the result of evaluations conducted by Bushman Group Pty Ltd.