

The HDPE geomembrane, is high performance for Chemical Resistance. The **Proflex GL** Geomembrance Sheet is uses for Waste Water Pond, Marine Culture Farming, Lake, Agriculture Reservoir & Tanks Lining,

- Composites of Materials:** High Density Polyethylene “HDPE”
- Thickness of HDPE Geomembrane:** 0.75, 1.00, 1.50, 2.00 & 2.50
- Chemical or UV Resistance:** Excellent [Please refer to below item details]
- Quality Properties:** Achieved to Worldwide Standards

LAMACO Proflex GL, is the world’s leading supplier of high quality, polyethylene geomembranes. LAMACO Proflex GL polyethylene geomembranes are resistant to a great number and combinations of chemicals. Note that the effect of chemicals on any material is influenced by a number of variable factors such as temperature, concentration, exposed area and duration. Many tests have been performed that use geomembranes and certain specific chemical mixtures. Naturally, however, every mixture of chemicals cannot be tested for, and various criteria may be used to judge performance. Reported performance ratings may not apply to all applications of a given material in the same chemical. Therefore, these ratings are offered as a guide only.

SMOOTH SHEET – HDPE GEOMEMBRANE SPECIFICATIONS

Property	Test Method	Unit	Minimum Value of Require			
HDPE Geomembrane Model Type:		Proflex	GL100	GL150	GL200	GL250
Thickness (avg.)	ASTM D 5199	mm.	1.00	1.50	2.00	2.50
Minimum single value		mm.	0.90	1.35	1.80	2.25
Density	ASTM D 1505	g/cc	0.94	0.94	0.94	0.94

Tensile Properties Either ASTM D 638

Yield Strength	TYPE IV,2 ipm	N/mm2	15	22	29	37
Break Strength		N/mm2	27	40	53	67
Yield Elongation	G.L. 1.3 in.	%	12	12	12	12
Break Elongation	G.L. 2.0 in.	%	700	700	700	700
Tear Resistance	ASTM D 1004	N	125	187	249	311
Puncture Resistance	ASTM D 4833	N	320	480	640	800
Carbon Black Content	ASTM D 1603	%	2-3			
Notch Constant Tensile	ASTM D 5397	hr.	300	300	300	300

Property	Test Method	Unit	Confirmed Tested Value of			
			Proflex	GL100	GL150	GL200
HDPE Geomembrane Model Type:						
Thickness (avg.)	ASTM D 5199	mm.	1.00	1.50	2.00	2.50
Minimum single value		mm.	0.90	1.35	1.80	2.25
Density	ASTM D 1505	g/cc	0.94	0.94	0.94	0.94
Width	-	m.	4.00-8.00			
Roll Length (approximate)	-	m.	100-150			

Tensile Properties Either ASTM D 638

Yield Strength	TYPE IV, 2 ipm	N/mm ²	16	23	30	38
Break Strength		N/mm ²	29	43	55	69
Yield Elongation	G.L. 1.3 in.	%	12	12	12	12
Break Elongation	G.L. 2.0 in.	%	700	700	700	700
Tear Resistance	ASTM D 1004	N	130	193	253	317
Puncture Resistance	ASTM D 4833	N	320	492	665	810
Notch Constant Tensile	ASTM D 5397	hr.	300	300	300	300
Melt Index	ASTM D 1238	g/10min	<1.0			
Carbon Dispersion	ASTM D 5596		CAT 1 or 2			
Oxidative Induction Time	ASTM D 3895	min.	>100			
Low Temp. Brittleness	ASTM D746	C	<-77			
Dimensional Stability	ASTM D1204,	100 C, 1hr [%]	+/-2			

This information is provided for reference purposes only and is not intended as a warranty or guarantee. LAMACO assumes no liability in connection with the use of this information. Check with LAMACO for current, standard minimum quality assurance procedures.

Abbreviations

S=Satisfactory
L=Limited application possible

U=Unsatisfactory
-=Not tested

Concentration

sat. sol. Saturated aqueous solution, prepared at 20°C (68°F)

sol. aqueous solution with concentration above 10% but below saturation level

dil.sol. diluted aqueous solution with concentration below 10%

				Resistance at: 20°C to 60°C				Resistance at: 20°C to 60°C	
Medium	Concentration			Medium	Concentration				
A				Carbon monoxide	100%	S	S		
Acetic acid	100%	S	L	Chloroacetic acid	sol.	S	S		
Acetic acid	10%	S	S	Carbon tetrachloride	100%	L	U		
Acetic acid anhydride	100%	S	L	Chlorine, aqueous solution	sat.sol.	L	U		
Acetone	100%	L	L	Chlorine, gaseous dry	100%	L	U		
Adipic acid	sat.sol.	S	S	Chloroform	100%	U	U		
Allyl alcohol	96%	S	S	Chromic acid	20%	S	L		
Aluminium chloride	sat.sol.	S	S	Chromic acid	50%	S	L		
Aluminium fluoride	sat.sol.	S	S	Citric acid	sat.sol.	S	S		
Aluminium sulfate	sat.sol.	S	S	Copper chloride	sat.sol.	S	S		
Alum	sol.	S	S	Copper nitrate	sat.sol.	S	S		
Ammonia, aqueous	dil.sol.	S	S	Copper sulfate	sat.sol.	S	S		
Ammonia, gaseous dry	100%	S	S	Cresylic acid	sat.sol.	L	-		
Ammonia, liquid	100%	S	S	Cyclohexanol	100%	S	S		
Ammonium chloride	sat.sol.	S	S	Cyclohexanone	100%	S	L		
Ammonium fluoride	sol.	S	S	D					
Ammonium nitrate	sat.sol.	S	S	Decahydronaphthalene	100%	S	L		
Ammonium sulfate	sat.sol.	S	S	Dextrine	sol.	S	S		
Ammonium sulfide	sol.	S	S	Diethyl ether	100%	L	-		
Amyl acetate	100%	S	L	Diethylphthalate	100%	S	L		
Amyl alcohol	100%	S	L	Dioxane	100%	S	S		
Aniline	100%	S	L	E					
Antimony trichloride	90%	S	S	Ethanediol	100%	S	S		
Arsenic acid	sat.sol.	S	S	Ethanol	40%	S	L		
Aqua regia	HCl-HNO ₃ 3/1	U	U	Ethyl acetate	100%	S	U		
B				Ethylene trichloride	100%	U	U		
Barium carbonate	sat.sol.	S	S	F					
Barium chloride	sat.sol.	S	S	Ferric chloride	sat.sol.	S	S		
Barium hydroxide	sat.sol.	S	S	Ferric nitrate	sol.	S	S		
Barium sulfate	sat.sol.	S	S	Ferric sulfate	sat.sol.	S	S		
Barium sulfide	sol.	S	S	Ferrous chloride	sat.sol.	S	S		
Benzaldehyde	100%	S	L	Ferrous sulfate	sat.sol.	S	S		
Benzene	-	L	L	Fluorine, gaseous	100%	U	U		
Benzoic acid	sat.sol.	S	S	Fluorosilicic acid	40%	S	S		
Beer	-	S	S	Formaldehyde	40%	S	S		
Borax (sodium tetraborate)	sat.sol.	S	S	Formic acid	50%	S	S		
Boric acid	sat.sol.	S	S	Formic acid	98-100%	S	S		
Bromine, gaseous dry	100%	U	U	Furfuryl alcohol	100%	S	L		
Bromine, liquid	100%	U	U	G					
Butane, gaseous	100%	S	S	Gasoline	-	S	L		
1-Butanol	100%	S	S	Glacial acetic acid	96%	S	L		
Butyric acid	100%	S	L						

Medium	Resistance at: 20°C to 60°C		Medium	Resistance at: 20°C to 60°C	
	Concentration			Concentration	
C			Glucose	sat.sol.	S S
Calcium carbonate	sat.sol.	S S	Glycerine	100%	S S
Calcium chlorate	sat.sol.	S S	Glycol	sol.	S S
Calcium chloride	sat.sol.	S S			
Calcium nitrate	sat.sol.	S S			
Calcium sulfate	sat.sol.	S S			
Calcium sulfide	dil.sol.	L L			
Carbon dioxide,gaseous dry	100%	S S			
Carbon disulfide	100%	L U			
H					
Heptane	100%	S U			
Hydrobromic acid	50%	S S	Potassium permanganate	20%	S S
Hydrobromic acid	100%	S S	Potassium persulfate	sat.sol.	S S
Hydrochloric acid	10%	S S	Potassium sulfate	sat.sol.	S S
Hydrochloric acid	35%	S S	Potassium sulfite	sol.	S S
Hydrocyanic acid	10%	S S	Propionic acid	50%	S S
Hydrofluoric acid	4%	S S	Propionic acid	100%	S L
Hydrofluoric acid	60%	S L	Pyridine	100%	S L
Hydrogen	100%	S S	Q		
Hydrogen peroxide	30%	S L	Quinol (Hydroquinone)	sat.sol.	S S
Hydrogen peroxide	90%	S U	S		
Hydrogen sulfide,gaseous	100%	S S	Salicylic acid	sat.sol.	S S
L			Silver acetate	sat.sol.	S S
Lactic acid	100%	S S	Silver cyanide	sat.sol.	S S
Lead acetate	sat.sol.	S -	Silver nitrate	sat.sol.	S S
M			Sodium benzoate	sat.sol.	S S
Magnesium carbonate	sat.sol.	S S	Sodium bicarbonate	sat.sol.	S S
Magnesium chloride	sat.sol.	S S	Sodium biphosphate	sat.sol.	S S
Magnesium hydroxide	sat.sol.	S S	Sodium bisulfite	sol.	S S
Magnesium nitrate	sat.sol.	S S	Sodium bromide	sat.sol.	S S
Maleic acid	sat.sol.	S S	Sodium carbonate	sat.sol.	S S
Mercuric chloride	sat.sol.	S S	Sodium chlorate	sat.sol.	S S
Mercuric cyanide	sat.sol.	S S	Sodium chloride	sat.sol.	S S
Mercuric nitrate	sol.	S S	Sodium cyanide	sat.sol.	S S
Mercury	100%	S S	Sodium ferricyanide	sat.sol.	S S
Methanol	100%	S S	Sodium ferrocyanide	sat.sol.	S S
Methylene chloride	100%	L -	Sodium fluoride	sat.sol.	S S
Milk	-	S S	Sodium hydroxide	40%	S S
Molasses	-	S S	Sodium hydroxide	sat.sol.	S S
N			Sodium hypochlorite	15%active chlorine	S S
Nickel chloride	sat.sol.	S S	Sodium nitrate	sat.sol.	S S
Nickel nitrate	sat.sol.	S S	Sodium nitrite	sat.sol.	S S
Nickel sulfate	sat.sol.	S S	Sodium orthophosphate	sat.sol.	S S
Nicotinic acid	dil.sol.	S -	Sodium sulfate	sat.sol.	S S
Nitric acid	25%	S S	Sodium sulfide	sat.sol.	S S
Nitric acid	50%	S U	Sulfur dioxide,dry	100%	S S
Nitric acid	75%	U U	Sulfur trioxide	100%	U U
Nitric acid	100%	U U	Sulfuric acid	10%	S S
O			Sulfuric acid	50%	S S
Oils and Grease	-	S L	Sulfuric acid	98%	S U
Oleic acid	100%	S L	Sulfuric acid	fuming	U U
Orthophosphoric acid	50%	S S	Sulfurous acid	30%	S S
Orthophosphoric acid	95%	S L	T		
Oxalic acid	sat.sol.	S S	Tannic acid	sol.	S S
Oxygen	100%	S L	Tartaric acid	sol.	S S
Ozone	100%	L U	Thionyl chloride	100%	L U
P			Toluene	100%	L U
Petroleum (kerosene)	-	S L	Triethylamine	sol.	S L
Phenol	sol.	S S	U		
Phosphorus trichloride	100%	S L	Urea	sol.	S S
Photographic developer	cust.conc.	S S			
Picric acid	sat.sol.	S -			
Potassium bicarbonate	sat.sol.	S S	W		
Potassium bisulfide	sol.	S S	Water	-	S S
Potassium bromate	sat.sol.	S S	Wine vinegar	-	S S

**Resistance at:
20°C to 60°C**
**Resistance at:
20°C to 60°C**

Medium	Concentration			Medium	Concentration		
Potassium bromide	sat.sol.	S	S	Wines and liquors	-	S	S
Potassium carbonate	sat.sol.	S	S	X			
Potassium chlorate	sat.sol.	S	S	Xylenes	100%	L	U
Potassium chloride	sat.sol.	S	S	Y			
Potassium chromate	sat.sol.	S	S	Yeast	sol.	S	S
Potassium cyanide	sol.	S	S	Z			
Potassium dichromate	sat.sol.	S	S	Zinc carbonate	sat.sol.	S	S
Potassium ferricyanide	sat.sol.	S	S	Zinc chloride	sat.sol.	S	S
Potassium ferrocyanide	sat.sol.	S	S	Zinc (II) chloride	sat.sol.	S	S
Potassium fluoride	sat.sol.	S	S	Zinc (IV) chloride	sat.sol.	S	S
Potassium hydroxide	10%	S	S	Zinc oxide	sat.sol.	S	S
Potassium hydroxide	sol.	S	S	Zinc sulfate	sat.sol.	S	S
Potassium hypochlorite	sol.	S	L				
Potassium nitrate	sat.sol.	S	S				
Potassium orthophosphate	sat.sol.	S	S				
Potassium perchlorate	sat.sol.	S	S				

Specific immersion testing should be undertaken to ascertain the suitability of chemicals not listed above with reference to special Requirements.

- (S) Satisfactory:** Liner material is resistant to the given reagent at the given concentration and temperature. No mechanical or chemical degradation is observed.
- (L) Limited Application Possible:** Liner material may reflect some attack. Factors such as concentration, pressure and temperature directly. Effect liner performance against the given media. Application, however, is possible under less severe conditions, e.g. lower concentration, Secondary containment, additional liner protections, etc.
- (U) Unsatisfactory:** Liner material is not resistant to the given reagent at the given concentration and temperature. Mechanical and/or Chemical degradation is observed.
- (-) Not tested**

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