



The Pioneer Of Geosynthetics
S I N C E 1 9 7 2

High Density Polyethylene (HDPE) vs. Polyvinyl Chloride (PVC)

GSE HDPE geomembranes are manufactured from high grade resin blended with antioxidants and carbon black for enhanced UV resistance. Because no plasticizers are used, GSE HD is not subject to the embrittlement that can occur when plasticizers leach out. Due to its chemical structure, polyethylene has the best chemical resistance among available geomembrane types. The table below lists different physical characteristics of both HDPE and PVC geomembranes.

Property	HDPE (GSE HD)	PVC
Maximum Temperature*	150° F	140° F
Acid Resistance**	Excellent	Poor to good
Alkali Resistance**	Excellent	Good
Chlorinated Hydrocarbon Resistance**	Very Good	Poor
Aromatic Hydrocarbon Resistance**	Very Good	Poor
Aliphatic Hydrocarbon Resistance**	Excellent	Poor to moderate
Ultimate Tensile Strength	> 4,000 psi	< 2,300 psi
Ultimate Tensile Elongation	> 700%	< 500%
Plasticizer Requirement	None	Yes***
Filler Requirement	None	Yes
Molecular Structure	Contains only carbon-carbon and carbon-hydrogen bonds which require much energy to bond cleave	Includes carbon-chlorine which require less energy to cleave
Crosslinking Due to UV	None	Yes and results in cracking
Seaming Integrity	Uses same material as the parent sheet.	Uses solvents which may alter the parent sheet's chemical composition
Low Temperature Brittleness	< -90° C	-40° C
Permeability	< 1 x 10 ⁻¹² cm/s	1 x 10 ⁻¹⁰ cm/s

NOTES:

* Maximum allowable temperature may be limited by chemical exposure. Contact GSE for more details.

** Material resistance varies according to the particular exposure media. Contact GSE for more details.

*** The plasticizer(s) tend(s) to migrate to the surface and escape due to their low molecular weight. They also greatly affect the material's resistance to various exposure media.