

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 compares the physical characteristics between HDPE and PVC geomembranes.

Property	HDPE (GSE HD)	PVC
Maximum Temperature*	160° 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 cleave	Includes carbon-chlorine bond 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.

GSE is a leading manufacturer and marketer of geosynthetic lining products and services. We've built a reputation of reliability through our dedication to providing consistency of product, price and protection to our global customers.

Our commitment to innovation, our focus on quality and our industry expertise allow us the flexibility to collaborate with our clients to develop a custom, purpose-fit solution.



[DURABILITY RUNS DEEP] For more information on this product and others, please visit us at GSEworld.com, call 800.435.2008 or contact your local sales office.