

# LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) - GEOMEMBRANE

Linear Low-Density Polyethylene (LLDPE) is a widely used industry-standard geomembrane for various applications. With more flexibility than High-Density Polyethylene (HDPE), it is often used when flexibility is a design priority over the wider range of chemical resistance and rigidity offered by HDPE. LLDPE offers a more economical solution for a broad range of containment needs, including oil and gas sites, wastewater systems, and soil remediation. It is commonly used as pond liners, above-ground storage tank liners, and components in soil caps and closures.

November 2025		LLDPE				
Material Properties	Rev	ASTM	LLDPE 20 mil	LLDPE 30 mil	LLDPE 40 mil	LLDPE 60 mil
	Thickness (minimum average)	D5199	20 mil 0.5 mm	30 mil 0.75 mm	40 mil 1.0 mm	60 mil 1.5 mm
	Thickness (Lowest individual of 10 value)	D5199	-10%	-10%	-10%	-10%
	Density (typical)	D792	≤ 0.939 g/ml	≤ 0.939 g/ml	≤ 0.939 g/ml	≤ 0.939 g/ml
	Tensile Strength at Break	D6693	76 ppi 13 N/mm	114 ppi 20 N/mm	152 ppi 27 N/mm	228 ppi 40 N/mm
	Elongation	D6693	800%	800%	800%	800%
	Tear Resistance	D1004	11 lbs 50 N	16 lbs 70 N	22 lbs 100 N	33 lbs 150 N
	Puncture Resistance	D4833	29 lbs 120 N	42 lbs 190 N	56 lbs 250 N	84 lbs 370 N
	Carbon Black Content	D6370	≥ 2.0%	≥ 2.0%	≥ 2.0%	≥ 2.0%
	Carbon Black Dispersion	D5596	Cat 1 or 2	Cat 1 or 2	Cat 1 or 2	Cat 1 or 2
	UV Resistance HPOIT retained after 1600 hrs	D7238 D5885	35%	35%	35%	35%

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## LLDPE Minimum Shop Seam Strengths

Style	ASTM D6392	LLDPE 20 mil	LLDPE 30 mil	LLDPE 40 mil	LLDPE 60 mil
Heat Bonded Seam Strength	25.4 mm (1") Strip	30 ppi 5.2 N/mm	45 ppi 7.7 N/mm	60 ppi 10.3 N/mm	Not shop fabricated
Peel Adhesion Strength (Wedge Welded)	25.4 mm (1") Strip	25 ppi 4.3 N/mm	38 ppi 6.5 N/mm	50 ppi 8.6 N/mm	Not shop fabricated

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## LLDPE Minimum Field Seam Strengths

Style	ASTM D6392	LLDPE 20 mil	LLDPE 30 mil	LLDPE 40 mil	LLDPE 60 mil
Heat Bonded Seam Strength	25.4 mm (1") Strip	30 ppi 5.2 N/mm	45 ppi 7.7 N/mm	60 ppi 10.3 N/mm	90 ppi 15.7 N/mm
Peel Adhesion Strength (Wedge Welded)	25.4 mm (1") Strip	22 ppi 3.8 N/mm	34 ppi 5.9 N/mm	44 ppi 8.7 N/mm	66 ppi 11.6 N/mm

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