

# GeoTough™ RPP

## Geosynthetic Membrane



### Overview

Carlisle's GeoTough RPP Geosynthetic Membrane is a heat-weldable polyester reinforced sheet designed for floating covers and liners in industrial water containment applications. The membrane is specifically formulated for long-term use in buried or exposed geomembrane applications. The membrane is based on a UV-stabilized polypropylene copolymer that does not require either polymeric or liquid plasticizers to maintain flexibility.

Physical properties of the membrane are enhanced by a strong, polyester fabric (scrim) that is encapsulated between the polypropylene based top and bottom plies. The combination of the fabric and polypropylene provide reinforced membranes with high breaking / tearing strength and puncture resistance. The relatively smooth surface of the GeoTough RPP facilitates production of a total surface fusion weld that creates a consistent, watertight monolithic sheet.

### Features and Benefits

- » Outstanding seamability
- » Outstanding puncture resistance
- » Plasticizer-free, does not contain liquid or polymeric plasticizers
- » Excellent low temperature impact resistance
- » Excellent chemical and environmental stress-cracking resistance
- » Exceptional resistance to solar UV, ozone, and oxidation
- » Low water vapor permeance and water absorption
- » Hot melt extrusion processed (not calendered) for complete scrim encapsulation
- » Warp knitted fabric (not woven) for smooth surface and greater thickness-over-scrim
- » Polyester reinforcing fabric which is resistant to degradation by soil bacteria

Available colors are black, tan and white (black bottom ply) in 36-mil, 45-mil and 60-mil thicknesses. Special colors, with minimum quantity requirements, are available on request. Standard roll sizes are 12 ft wide by 600 ft in 36-mil and 45-mil and 12 ft wide by 400 ft in 60-mil.

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### Typical Properties and Characteristics

Physical Property	Test Method	Property Of Unaged Sheet	Property After Aging 30 days @ 185 °F
Tolerance on nominal thickness, %	ASTM D 5199	± 10	
Thickness over scrim, in. (mm) 36-mil 45-mil 60-mil	ASTM D 4637 Optical Method	0.010 (0.254) min. 0.013 (0.330) min. 0.018 (0.457) min.	
Mass per unit area, lb/ft <sup>2</sup> (g/ ft <sup>2</sup> ) (kg/m <sup>2</sup> ) 36-mil 45-mil 60-mil	ASTM D 5261	0.17 (77) (0.83) typical 0.21 (95) (1.03) typical 0.29 (132) (1.42) typical	
Breaking strength, lbf (kN) (grab tensile at strain rate of 12 in./min.) 36-mil 45 & 60-mil	ASTM D 751 Grab Method A	200 (0.9) min. 260 typ. 250 (1.1) min. 300 typ.	200 (0.9) min. 260 typ. 250 (1.1) min. 300 typ.
Elongation at break of fabric, %	ASTM D 751	25 typical	25 typical
Tearing strength, lbf (N) (2 in. / min. strain rate) 36-mil 45 & 60-mil	ASTM D 5884 (max. load)	80 (356) min. 130 (578) typ. 100(445) min. 160 (712) typ.	
Low temperature flexibility, °F (°C)	ASTM D 2136 1/8 in. mandrel 4 hour @ temp.	- 40 (- 40) max. - 50 (- 46) typical	
Linear Dimensional Change (shrinkage), %	ASTM D 1204		+/- 1.0 max. - 0.5 typical
Ozone resistance, 100 pphm, 168 hours	ASTM D 1149	No cracks	No cracks
Resistance to water (distilled) absorption After 30 days immersion 122 °F (50 °C) Change in mass, %	ASTM D 471 (coating compound)	1.0 max. 0.5 typical	
Hydrostatic resistance, lbf/in.2 or psi (MPa) (Mullen burst) 36-mil 45-mil 60-mil	ASTM D 751 Procedure A	350 (2.4) min. 400 (2.8) typical 450 (3.1) typical 500 (3.4) typical	350 (2.4) min. 400 (2.8) typical 450 (3.1) typical 500 (3.4) typical
Field seam strength, lbf/in. (kN/m) Seam tested in peel after weld	ASTM D 4437 1 in. wide	30 (5.3) min. 60 (10.5) typical	
Water vapor permeance, Perms	ASTM E 96	0.10 max. 0.05 typical	
Puncture resistance, lbf (N) 36-mil & 45-mil 60-mil	ASTM D 4833 (index puncture)	85 (378) min. 110 (489) typical 120 (534) typical	
Resistance to xenon-arc weathering <sup>1</sup> Xenon-Arc, 15,120 kJ/m <sup>2</sup> total radiant exposure, visual condition at 10X	ASTM G 155 0.70 W/m <sup>2</sup> 80 °C B.P.T.	No cracks No loss of breaking or tearing strength	

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

<sup>1</sup> Equivalent to 12,000 hours exposure at 0.35 W/m<sup>2</sup> irradiance

B.P.T. is black panel temperature