



# CARLISLE'S **GeoMembrane**

**TECHNICAL DATA BULLETIN**

**CARLISLE SYNTEC INCORPORATED**

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## **CARLISLE NON-REINFORCED POLYPROPYLENE GEOMEMBRANE™**

Carlisle Non-Reinforced Polypropylene GeoMembrane is a heat-weldable non-reinforced sheet designed for liners in potable water and industrial 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, which does not require either polymeric or liquid plasticizers to maintain flexibility.

Physical properties of the membrane are enhanced by the high tensile, elongation, and tear resistance of the reactor grade polypropylene base resin. The smooth surface of Carlisle's GeoMembrane facilitates production of a total surface fusion weld that creates a consistent, watertight monolithic sheet.

### **FEATURES:**

- Outstanding heat seamability
- Superb extensibility / elongation
- Plasticizer and chlorine free
- 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 calendared) for very low machine induced shrinkage
- ANSI/NSF-61 Drinking Water contact certification (Potable Grade)

Carlisle's Non-Reinforced Polypropylene GeoMembrane is manufactured in two grades; Potable (water) Grade and Industrial Grade. The Potable Grade was tested by NSF International and meets the requirements of ANSI / NSF Standard 61 for Drinking Water System Components – Health Effects.

Available colors are black, tan and white (black bottom ply) in 40-mil and 60-mil thicknesses. Special colors are available on request. Standard roll sizes are 12 ft wide by 600 ft in 40-mil and 12 ft wide by 400 ft in 60-mil.

### **TYPICAL PROPERTIES AND CHARACTERISTICS:**

See table that is attached.

Typical weights are 0.21 lb/ft<sup>2</sup> (1.03 kg/m<sup>2</sup>) for 45-mil and 0.30 lb/ft<sup>2</sup> (1.42 kg/m<sup>2</sup>) for 60-mil membrane.

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Printed in USA 9/03F

## CARLISLE NON-REINFORCED POLYPROPYLENE GEOMEMBRANE

<b>TYPICAL PROPERTIES AND CHARACTERISTICS</b>			
<b>Physical Property</b>	<b>Test Method</b>	<b>Property Of Unaged Sheet</b>	<b>Property After Aging 30 days @ 185 °F</b>
Tolerance on nominal thickness, %	ASTM D 5199	± 10	
Mass per unit area, lb/ft <sup>2</sup> (g/ ft <sup>2</sup> ) (kg/m <sup>2</sup> ) 40-mil 60-mil	ASTM D 5261	0.21 (95) (1.03) typical 0.30 (136) (1.46) typical	
Tensile strength, lbf (kN)	ASTM D 638 Dumbbell IV	72 (12.6) min. 96 (16.8) typical	72 (12.6) min. 96 (16.8) typical
Tensile elongation, %	ASTM D 638	700 min. 750 typical	700 min. 750 typical
Tear resistance, lbf (N)	ASTM D 1004	12 (53.3) min. 18 (80.0) typical	12 (53.3) min. 18 (80.0) typical
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
Carbon Black content, % (Black membrane only)	ASTM D 4218	2 min. 2.75 typical	
Resistance to water (distilled) absorption After 30 days immersion 122 °F (50 °C) Change in mass, %	ASTM D 471	1.0 max. 0.5 typical	
Field seam strength, lbf/in. (kN/m) Seam tested in peel after weld	ASTM D 1876	Cannot separate weld (breaks outside weld)	
Water vapor permeance, Perms	ASTM E 96	0.10 max. 0.05 typical	
Puncture resistance, lbf (N)	ASTM D 4833	30 (133) min. 40 (178) typical	30 (133) min. 40 (178) typical
Resistance to xenon-arc weathering <sup>1</sup> Xenon-Arc, 10,080 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	

<sup>1</sup> Approximately equivalent to 8000 hours exposure at 0.35 W/m<sup>2</sup> irradiance