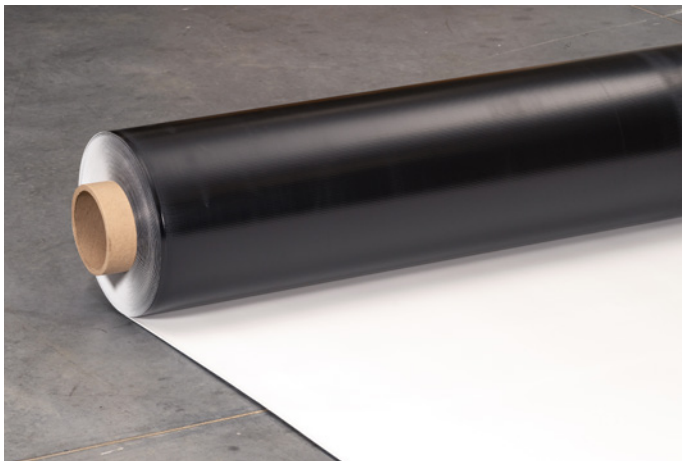
CARLISLE SYNTEC SYSTEMS

ROOF GARDEN
Root Barrier



Overview

Carlisle's Root Barrier is a 45-mil reinforced, heat-weldable, thermoplastic olefin sheet formulated for use in below-grade and vegetated applications to resist root penetration and soil bacteria. Carlisle's Root Barrier is typically used in medium to deep Roof Garden assemblies where plants, such as grasses, with intrusive roots are used. This high-performance Root Barrier is based on a UV-stabilized TPO which does not require polymeric or liquid plasticizers to maintain flexibility. Carlisle's Root Barrier must be fusion heat-welded at all overlaps and joints to form a continuous, monolithic sheet. This installation method is essential for long-term root resistance and ensures compliance with the stringent requirements of root penetration testing.

Features and Benefits

- Trusted protection – Shields the roofing membrane from root damage
- Seamless – Fusion-welded seams block root intrusion
- Proven performance – Certified root resistance (EN 13948)
- Durable – Tough, reinforced membrane provides long-term protection against punctures

Installation

Carlisle's Root Barrier is typically installed above a loose-laid protection layer, such as Carlisle's CCW 300HV Protection Fabric, to protect the primary roof membrane from damage during the seaming process. Begin installation by unrolling the Root Barrier over the protection fabric, overlapping adjacent sheets by 3" at all seams. The Root Barrier shall extend a minimum of 3" beyond the planned location of the Roof Garden Aluminum Edge, terminating outside the Roof Garden area within vegetation-free zones. Field seams are completed with 1.5" hot-air welds using a VARIMAT hot-air welder or equivalent, to form a monolithic sheet. After welding, inspect all seams with a probe to verify weld continuity and ensure seam integrity.

Root Barrier is typically loose-laid and held in place by the weight of the Roof Garden system. However, if desired, or when installing in high wind conditions, securement may be required to prevent movement prior to installation of subsequent Roof Garden layers. In these cases, the Root Barrier should be spot-welded or spot-taped around the perimeter to the primary roof membrane following applicable Carlisle details.

Refer to Carlisle's Sure-Weld® TPO Welding Guide for complete heat-welding instructions.

Review current Carlisle specifications and details for complete installation information.

Specifications

Thickness	45-mil
Standard Width	12'
Standard Length	100'
Typical Weight	0.25 lb/ft^2 (1.22 kg/m^2)
Color	White

Green Building Information

Pre-Consumer Recycled Content	10%
Post-Consumer Recycled Content	0%
Solar Reflectance Index (SRI)	99
Global Warming Potential (GWP)	2.90 kg CO_2 eq
Volatile Organic Compounds (VOC) Content	N/A
Manufacturing Location(s)	Senatobia, MS Tooele, UT Carlisle, PA
Corporate Sustainability Report (CSR) Availability	Yes
Environmental Product Declaration (EPD) Availability	No

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Typical Properties and Characteristics

Physical Property	Requirements	45-mil (1.14 mm)
Tolerance on Nominal Thickness, % ASTM D751 test method	+15, -10	± 10
Thickness Over Scrim, in. (mm) ASTM D7635 optical method, average of 3 areas	0.015 min (0.380)	0.018 typical (0.457)
Breaking Strength, lbf (kN) ASTM D751 grab method	220 (976 N) min	225 (1.0) min 320 (1.4) typical
Elongation Break of Reinforcement, % ASTM D751 grab method	15 min	15 min 25 typical
Tearing Strength, lbf (N) ASTM D751 proc. B 8 in. x 8 in.	55 (245) min	55 (245) min 130 (578) typical
Brittleness Point, °F (°C) ASTM D2137	-40 (-40) max	-40 (-40) max -50 (-46) typical
Linear Dimensional Change, % ASTM D1204, 6 hours at 158°F	± 1 max	± 1 max -0.2 typical
Ozone Resistance, no cracks 7X ASTM D1149, 100 pphm, 168 hrs	PASS	PASS
UV Exposure (Xenon Arc), no cracks, 7X ASTM G155, min. exposure 10,080 kJ/m^2 (4,000 hrs - 0.70 W/m^2)	PASS	PASS
Water Absorption Resistance, mass % ASTM D471 top surface only 166 hours at 158°F water	± 3.0 max	± 3.0 max 0.90 typical
Factory Seam Strength, lbf (N) ASTM D751 grab method	66 (290) min	66 (290) min
Field Seam Strength, lbf/in (kN/m) ASTM D1876 tested in peel	No requirement	25 (4.4) min 50 (8.8) typical
Water Vapor Permeance, Perms ASTM E96 proc. B	No requirement	0.10 max 0.05 typical
Puncture Resistance, lbf (kN) FTM 101C, method 2031 (see supplemental section)	No requirement	250 (1.1) min 325 (1.4) typical
Properties After Heat Aging ASTM D573, 32 weeks @ 240°F or 8 weeks @ 275°F No cracking when bent around 3" diameter mandrel Weight Change, %	 PASS No cracking ± 1.5 max	 PASS No cracking 1.0 max
Typical Weights lb/ft^2 (kg/m^2)		0.25 (1.22)
Air Permeance, ASTM E2178	No Requirement	PASS
Long Term Root Resistance, EN 13948	PASS	PASS

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.

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