

Roofing Membranes

General Description

Roofing membranes are fabricated from strong, flexible, waterproof materials. They may be applied in multiple layers, as in the venerable Built-Up Roof (BUR), or they may consist of a single-ply membrane. Membranes usually contain a fabric made from felt, fiberglass, or polyester, for strength, which is laminated to or impregnated with a flexible polymeric material. The polymeric material may range from bituminous hydrocarbon materials such as asphalt, to synthetic rubber known as EPDM, to synthetic polymers such as polyvinyl chloride (PVC). The color of the polymer itself ranges from black to white, often depending on the amount of carbon black present. The upper surface of the membrane may be coated with a pigmented material which determines the color and solar reflectance, or it may simply be ballasted with roofing gravel. When a dark membrane is surfaced with roofing granules, the membrane has the appearance (and solar reflectance) of asphalt shingles.

For roofs ballasted with gravel, approximate values may be found at the end of this table, measured by Reagan and Acklam.

Table 3. General Solar Reflecting Characteristics of Roofing Membranes

Product	Solar Reflectance	Infrared Emittance	Temperature Rise	Solar Reflectance Index	Reference
Gray EPDM	0.23	0.87	68 F	21	FSEC 1
White EPDM	0.69	0.87	25 F	84	FSEC 1
Black EPDM	0.06	0.86	83 F	-1	FSEC 1
Hypalon	0.76	0.91	18 F	95	FSEC 1
T-EPDM	0.81	0.92	13 F	102	FSEC 1
Firestone SBS Bitumen on White	0.26	0.92	63 F	28	FSEC 1
Smooth Bitumen	0.06	0.86	83 F	-1	FSEC 1
White Granular Surface Bitumen	0.26	0.92	63 F	28	FSEC 1
Carlisle Syntec System Brite-Ply	0.77	0.90	17 F	96	LBNL 1
Ecology Roof	0.80	0.90	14 F	100	LBNL 1
Hypsam Roofing Systems, Hyload	0.75	0.90	19 F	93	LBNL 1
*Sarnafil Beige	0.43	0.92	49 F	49	LBNL 4
*Sarnafil Blue	0.61	0.92	32 F	73	LBNL 4
*Sarnafil White	0.83	0.92	11 F	104	LBNL 4
Stevens Hi-Tuff EP white	0.78	0.9	16 F	97	LBNL 1
Trocal Roofing	0.77	0.9	17 F	96	LBNL 1

Systems,White						
Trocal Roofing Systems,White	0.83	0.9	11 F	104	LBNL 1	
Dark gravel on BUR roof	0.12	0.9	76 F	9	Reagan	
Light gravel on BUR roof	0.34	0.9	57 F	37	Reagan	
White-coated gravel on BUR	0.65	0.9	28 F	79	Reagan	

*represents new data

List of Suppliers