

Low and High Solar-Reflectance Options for Typical Roofing Materials

Low Solar-Reflectance Option			High Solar-Reflectance Option		
Description	Albedo (%)	Average Cost ^[1] (\$/ft ²)	Description	Albedo (%)	Additional Cost ^[2] (% of avg. cost in column 2)
<i>Sloped roofs</i>					
dark composite asphalt shingle; dark fiberglass asphalt shingle; dark organic asphalt shingle	5-15	0.95 - 1.92	white asphalt shingle with "premium" white granules; not presently soldoption of high reflectance white	35 55	0 - 1% more
clay tile	25-35	7.22 - 9.55	white clay tile	70-80	0-35% more
concrete tile	10-30	3.17 - 4.80	white concrete tile	70-80	0-20% more
fiber-cement shingle (dark)	10-30	2.84	white fiber-cement shingle	60-80	0
unpainted metal (steel, aluminum) shingle;	60-70 [3]	3.49 - 6.0	white painted metal shingle	55-80	0
<i>Flat or low-slope roofs</i>					
built-up roof with dark gravel; built-up with mineral-surface cap sheet; built-up or coal tar roof with smooth asphalt surface; built-up roof with aluminum coating	5-10	1.25 - 2.13	built-up roof with white gravel;	40	0
	10-20		built-up roof with gravel and cementitious coating;	60	0-20% more
	5-10		built-up roof with white cementitious coating over a mineral surface cap sheet;	65	0-20% more
	30-55 ^[3]		smooth surface built-up roof with white roof coating	70-80	0- 30% more
black single-ply membrane (EPDM, CPE, CPSE)	5-10	1.06-2.01	Stevens Roofing "Cool-Black" white single-ply membrane (EPDM, CPE, CPSE); white coating on a black single-ply membrane	50 70-80 70-80	? 0-20% more 0-30% more
modified bitumen roof with mineral-surface cap sheet	10-20	1.44-1.84	white cementitious coating over a mineral surface cap sheet	65	0-20% more
unpainted metal roof	70 ^[3]	1.72-3.74	white painted metal roof	55-80	0-20% more

1 Average installed cost, including materials and labor. Sources: for all roofs except concrete tile: R.S. Means, *Assemblies Cost Data 1996*, R.S. Means Company, Kingston, MA, 1995. For concrete roof we used a supplier's estimate of material cost and R.S. Means estimate of installing a clay tile roof.

2 Additional costs are rough estimates of the additional installed cost, based on calls to manufacturers.

3 Unpainted metal and aluminum coatings exhibit low emissivity, resulting in higher surface temperatures in sunlight than their albedo would suggest.