



City of Huntington Beach
Department of Community Development
COOL ROOF REQUIREMENTS
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COOL ROOF PRESCRIPTIVE REQUIREMENTS FOR ALTERATIONS
2022 California Building Energy Efficiency Standards
City of Huntington Beach Climate Zone = 6

Definitions:

- LOW-SLOPED Roof is a roof that has a ratio of rise to run of less than 2:12 (9.5 degrees from the horizontal).
- STEEP-SLOPED Roof is a roof that has a ratio of rise to run of greater than or equal to 2:12 (9.5 degrees from the horizontal).
- SOLAR REFLECTANCE INDEX (SRI) is a measure of the roof's ability to reject solar heat, which includes both reflectance and emittance.
- EMITTANCE, THERMAL is the ratio of the radiant heat flux emitted by a sample to that emitted by a blackbody radiator at the same temperature.

(ALTERATION) Residential Requirements- Sec. 150.2(b)1I

Replacements of the exterior surface of existing roofs, including adding a new surface layer on top of the existing exterior surface, shall meet the requirements of Section 110.8 and the applicable requirements of Subsections i and ii where more than 50 percent of the roof is being replaced.

Exception 1 to Section 150.2(b)1Iia (Low-sloped): The aged solar reflectance can be met by using insulation at the roof deck specified in Table 150.2-B.

(ALTERATION) Multifamily Building Requirements- Sec. 180.2(b)1A

Existing roofs being replaced, recovered or recoated of a multifamily building shall meet the requirements of Section 110.8(i). For roofs with more than 50 percent of the roof area or more than 2,000 square feet of roof, whichever is less, being altered, the requirement of i below applies.

Exception to Section 180.2(b)1Ai (Low-sloped): The aged solar reflectance requirement can be met by using insulation at the roof deck specified in Table 180.2-A.

Residential & Multifamily requirements		
Roof Slope	Minimum Aged Solar Reflectance / Minimum Thermal Emittance 150.2(b)1Iia	Or Minimum Solar Reflectance Index (SRI) 150.2(b)1Iia
Low-sloped	0.63 / 0.75	75
Steep-sloped	NOT REQUIRED	NOT REQUIRED

TABLE 150.2-B & TABLE 180.2-A	
MINIMUM AGED SOLAR REFLECTANCE	ROOF DECK CONTINUOUS INSULATION R-VALUE
0.60	2
0.55	4
0.50	6
0.45	8
No requirement	10

Exception 2 to Section 150.2(b)1Iia & Exception 1 to Sections 180.2(b)1Ai: Roof area covered by building integrated photovoltaic panels or building integrated solar thermal panels is not required to meet the minimum requirements for aged solar reflectance, thermal emittance or SRI.

Exception 3 to Section 150.2(b)1Iia & Exception 2 to Sections 180.2(b)1Ai: Roof constructions with a weight of at least 25 lb/ft² are exempt from the minimum requirements for aged solar reflectance and thermal emittance, or SRI.

Non-Residential or hotel/motel Requirements- Sec. 141.0(b)2Bi

Existing roofs of a nonresidential or hotel/motel building being replaced, recovered or recoated, as defined in Section 100.1(b) and Title 24, Part 2, Chapter 2, shall meet the requirements of Section 110.8(i). When roofs with more than 50 percent of the roof area or more than 2,000 square feet of roof, whichever is less, are being altered the requirements of i and ii apply:

141.0(b)2Bi. Roofing products shall comply with requirements in Section 140.3(a)1A.

Roof Slope*	Minimum Aged Reflectance / Minimum Thermal Emittance	Or Minimum Solar Reflectance Index (SRI)	Roof/Ceiling insulation See exception below (141.0(b)2Bii)	
Non-Residential – Low-sloped	0.63 / 0.75	75	R-17 Continuous Insulation	U-factor: 0.047, with at least R-10 above deck
Non-Residential – Steep-sloped	0.25 / 0.80	23	NR	NR
Guest rooms of hotel and motel buildings – Low-sloped	NOT REQUIRED	NOT REQUIRED	R-17 Continuous Insulation	U-factor: 0.047, with at least R-10 above deck
Guest rooms of hotel and motel buildings – Steep-sloped	0.20 / 0.75	16	NOT REQUIRED	NOT REQUIRED

Exception 1 to Section 141.0(b)2Bi: An aged solar reflectance less than 0.63 is allowed for low-sloped roofs provided the maximum roof/ceiling U-factor in Table 141.0-B is not exceeded.

TABLE 141.0-B: ROOF/CEILING INSULATION TRADEOFF FOR LOW-SLOPED AGED SOLAR REFLECTANCE	
NONRESIDENTIAL	
Aged Solar Reflectance	U-factor
0.62–0.60	0.043
0.59–0.55	0.041
0.54–0.50	0.038
0.49–0.45	0.034
0.44–0.40	0.032
0.39–0.35	0.029
0.34–0.30	0.028
0.29–0.25	0.026

Exception 2 to Section 141.0(b)2Bi: Roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are not required to meet the minimum requirements for solar reflectance, thermal emittance, or SRI.

Exception 3 to Section 141.0(b)2Bi: Roof constructions with a weight of at least 25 lb/ft² are not required to meet the minimum requirements for solar reflectance, thermal emittance, or SRI.

141.0(b)2Bii. Roof/ceiling insulation. For low-sloped roofs, the area of the roof recover or roof replacement shall be insulated to the level specified in Table 141.0-C.

Exception 1 to Section 141.0(b)2Bii: Roof recovers with new R-10 insulation added above deck do not need to be insulated to the level specified in Table 141.0-C.

Exception 2 to Section 141.0(b)2Bii: When existing mechanical equipment located on the roof will not be disconnected and lifted, insulation added is the greater of R-10 or the maximum installed thickness that will allow the distance between the height of the roof membrane surface and the top of the base flashing to remain in accordance with the manufacturer's instructions.

Exception 3 to Section 141.0(b)2Bii: At the drains and other low points, tapered insulation with a thermal resistance less than that prescribed in Table 141.0-C may be used, provided that insulation thickness is increased at the high points of the roof so that the average thermal resistance equals or exceeds the value specified in Table 141.0-C.

Exception 4 to Section 141.0(b)2Bii: The area of the roof recoat is not required to be insulated.

Resources

Building Standards Commission
California Energy Commission:
California Energy Commission Hotline:
Cool Roof Rating Council:
CABEC (Calif. Assoc. of Building Energy Consultants)

<https://www.dgs.ca.gov/BSC/Codes>
<http://www.energy.ca.gov/title24/>
800-772-3300 / title24@energy.state.ca.us
www.coolroofs.org / 866-465-2523
www.cabec.org / 866-360-4002