Non-Residential and Hotel/Motel Re-roofing and the 2022 California Energy Code Compliance Requirements for Insulation and Cool Roofs

(Important information you need to know before obtaining a re-roof permit)

For **non-residential and Hotel/Motel (§141.0(b)2B)** re-roofing projects when more than 50% of the roof area or more than 2,000 square feet of roof, whichever is less, is being replaced, the roofing product must meet the requirements for a cool roof, see below.

Prescriptive Roofing Material Requirements for Nonresidential Building Alterations

Roof Style	Building Type	Climate Zones*	Either		Or
			3-year Aged Solar Reflectance	Thermal Emittance	SRI
Low-sloped	Nonresidential**	1-16	≥ 0.63	≥ 0.75	≥ 75
	Hotel/Motel Guest Room***	9,10,11,13,14,15	≥ 0.55	≥ 0.75	≥ 64
Steep-sloped	Nonresidential	1, 3	≥ 0.20	≥ 0.75	≥ 16
		2, 4-16	≥ 0.25	≥ 0.80	≥ 23
	Hotel/Motel Guest Rooms****	2-15	≥ 0.20	≥ 0.75	≥ 16

***Low-sloped** = rise-to-run ratio of < 2:12 (lower than 9.5 degrees); **steep-sloped** = rise-to-run ratio ≥ 2:12 (9.5 degrees or more); **SRI** = solar reflectance index.*

**There are no Prescriptive roofing material requirements for hotel/motel low-sloped roofs in Climate Zones 1-8, 12 and 16, or for hotel/motel steep-sloped roofs in Climate Zones 1 and 16.*

***Exceptions for low-sloped roofs:**

- *Roof constructions with a weight of at least 25 lb/ft² over the roof membrane*
- *Any roof area covered by building integrated photovoltaic panels or integrated solar thermal panels*
- *Roof and ceiling insulation trade-off for aged solar reflectance (see Table 10)*

****Exceptions for hotel/motel low-sloped roofs:**

- *Roof constructions with a weight of at least 25 lb/ft² over the roof membrane*

*****Exceptions for steep-sloped roofs:**

- *Any roof area covered by integrated photovoltaic panels or integrated solar thermal panels*

Prescriptive Roof/Ceiling Insulation Trade-offs for Aged Solar Reflectance for Alterations to Low-sloped Roof Nonresidential and Hotel/Motel Buildings		
Minimum Aged Solar Reflectance	Maximum Roof/Ceiling U-factor	
	All Building Types	
	Climate Zones 6-8	Climate Zones 1-5, 9-16
0.62- 0.60	≤ 0.043	≤ 0.035
0.59-0.55	≤ 0.041	≤ 0.034
0.54-0.50	≤ 0.038	≤ 0.031
0.49-0.45	≤ 0.034	≤ 0.029
0.44-0.40	≤ 0.032	≤ 0.028
0.39-0.35	≤ 0.029	≤ 0.026
0.34-0.30	≤ 0.028	≤ 0.025
0.29-0.25	≤ 0.026	≤ 0.024

Table 10. *Prescriptive Roof/Ceiling Insulation Trade-offs for Aged Solar Reflectance for Alterations to Low-sloped Roof Nonresidential and Hotel/Motel Buildings*

Roof/Ceiling insulation for **low sloped roof** the area of the recover or roof replacement shall be insulated to the level specified in Table 141.0-C

TABLE 141.0-C
INSULATION REQUIREMENTS FOR ROOF ALTERATIONS

Climate Zone	Continuous Insulation *R*-value	*U*-factor
1–5, 9–16	R-23	0.037, with at least R-10 above deck
6–8	R-17	0.047, with at least R-10 above deck

Exceptions:

1. Roof recovers with new R-10 insulation added above deck (does not apply to replaced roofs).
2. Existing mechanical equipment locate 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 from the height of the roof membrane surface to the top of the base flashing to remain in accordance with the manufacturer instructions.
    - Alternative way to write up, there is a lot of confusion about this: When existing mechanical equipment located on the roof is not disconnected and lifted, then either ≥R-10 or the maximum insulation thickness allowed per manufacturer's instructions for minimum base flashing heights, whichever is greater, must be installed. The R-10 exception is the minimum allowed in this scenario, and only if it can be documented that the minimum R-23 or R-17 is not supported by the manufacturer's instructions about allowed flashing height. If R-10 cannot be achieved with the existing flashing, the mechanical unit must be lifted to accommodate the full insulation requirement of R-23 in Climate Zones 1-5 and 9-16.
3. At the drains and other low points, tapered insulation w/ a thermal resistance less than that prescribed in Table 141.0-C may be used provided the insulation thickness 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
4. The area of the roof recoat is not required to be insulated.

A certificate of compliance energy form NRCC-ENV-E must be completed as applicable to a re-roof project and submitted with the permit application. Please visit Energy Code Ace at Energy Code Ace - Nonresidential Compliance Documents or The California Energy Commission at 2022 Supporting Documents - Forms - Nonresidential (ca.gov) for forms. Please see user instructions in form NRCC-ENV-E.

At final inspection an installation certificate from NRCI-ENV-E must be completed by the installing contractor and submitted to the building inspector.

Roofing products that are used for compliance with the energy standard are required to be tested and labeled by Cool Roof Rating Council (CRRC). The roofing products manufacturer must have its roofing product tested for solar reflectance and thermal emittance and be listed in the CRRC's Rater Product Directory (www.coolroofs.org) and be labeled according to the CRRC procedure.