City of Santa Clara
The Center of What's Possible

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2022 CALIFORNIA ENERGY CODE
COOL ROOF REQUIREMENTS FOR COMMERCIAL BUILDINGS

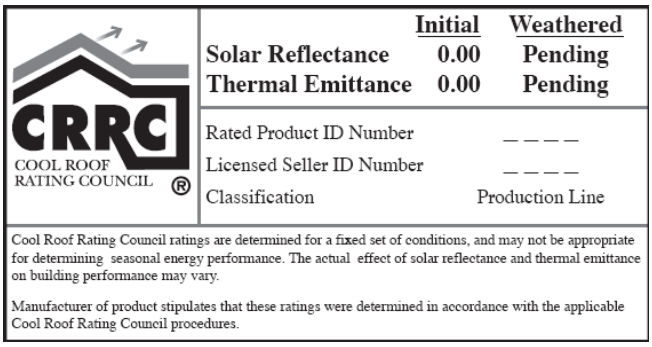
COOL ROOF requirements were adopted by the California Energy Commission – (CEC) for newly constructed buildings, additions, and the re-roofing of existing buildings for which permit applications were filed on or after January 1, 2023 and that use the prescriptive compliance method.

1. COOL ROOFS

To qualify as a COOL ROOF under the 2022 California Energy Code, the roofing material must:

- Have a Cool Roof Rating Council (CRRC) rating for Solar Reflectance and Thermal Emittance
- Meet the Aged Solar Reflectance and Thermal Emittance or SRI

The roofing products manufacturer must have its roofing product tested for solar reflectance and thermal emittance, and be listed in the CRRC's Rated Product Directory (see http://www.coolroofs.org) and be labeled as in the following example:



	Initial	Weathered
Solar Reflectance	0.00	Pending
Thermal Emittance	0.00	Pending
Rated Product ID Number		_ _ _ _
Licensed Seller ID Number		_ _ _ _
Classification		Production Line

CRRC COOL ROOF RATING COUNCIL ®

Cool Roof Rating Council ratings are determined for a fixed set of conditions, and may not be appropriate for determining seasonal energy performance. The actual effect of solar reflectance and thermal emittance on building performance may vary.

Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.

The labeled product material shall be available for the jurisdiction's permit inspector at the time of inspection.

2. NON-RESIDENTIAL BUILDINGS COOL ROOF REQUIREMENTS (Cal Energy Code, Section 140.3)

Construction Type	Slope	Min. 3-year Aged Solar Reflectance	Min. Thermal Emittance	Min. Solar Reflectance Index (SRI)
New Construction, Additions[1] and Re-Roofing[2]	2:12 or less	0.63	0.75	75
	Greater than 2:12	0.25	0.80	23
Hotel and Motel	Greater than 2:12	0.20	0.75	16

[1] For new construction and addition, an Aged Solar Reflectance less than 0.63 is allowed for low-sloped roof (2:12 or less) provided the maximum roof/ceiling U factor in Energy Standards Table 140.3 (see next page) is not exceeded.

[2] For re-roofing, an Aged Solar Reflectance less than 0.63 is allowed for low-sloped roofs (2:12 or less) provided the maximum roof/ceiling U-factor in Table 141.0-B (see next page) is not exceeded.

Note: If the Aged Reflectance (RAGED) is not available in the CRRC's Rated Product Directory, it can be calculated using the equation:

$$R_{AGED} = [0.2 + \beta\,(\rho_{initial} - 0.2)]$$ where, $\beta = 0.65$ for field-applied coating, or,

0.70 for not a field applied
coating $\rho_{initial}$ = Initial Solar Reflectance

Table 140.3 - Roof/Ceiling Insulation Tradeoff for Aged Solar Reflectance – Non-Residential Buildings

Aged Solar Reflectance	Metal Building in Climate Zone 4 U-factors	Wood Framed and Other Climate Zone 4 U-factor
0.62-0.56	0.038	0.032
0.55-0.46	0.035	0.030
0.45-0.36	0.033	0.029
0.35-0.25	0.031	0.028

Table 141.0-B - Roof/Ceiling Insulation Tradeoff for Low-Sloped Aged Solar Reflectance – Non-Residential Buildings

Aged Solar Reflectance	Climate Zone 4 U-factor
0.62-0.60	0.035
0.59-0.55	0.034
0.54-0.50	0.031
0.49-0.45	0.029
0.44-0.40	0.028
0.39-0.35	0.026
0.34-0.30	0.025
0.29-0.25	0.024

COOL ROOF EXEMPTIONS:

The following buildings and re-roofing of existing buildings are exempt from **COOL ROOF** requirements:

a. Buildings that are not heated or air-conditioned.
b. Buildings where the performance energy analysis approach justifies other roofing types.
c. Guest Rooms of Hotel and Motel buildings and High-Rise Residential buildings with a low sloped roof (2:12 or less).
d. Qualified historical buildings.
e. Re-roofing where the re-roofed area is less than 2,000 square feet or 50 percent of the roof, whichever is less.
f. Roofing area covered by building integrated photovoltaic panels and solar thermal panels.
g. Roof construction that has thermal mass over the roof membrane with at least 25 lb/ft^2.