

DO ALL COOL ROOFS LOOK THE SAME?

No. There are numerous materials including tile, metal, asphalt, and coatings that meet the cool roof requirements. Cool roofs are also available in a wide range of colors including light, dark, and vibrant shades.

A COOL ROOF CAN:

- Look good
- Keep the house cooler
- Increase occupant comfort
- Lower energy costs
- Last longer than conventional roofs
- Reduce roof and attic temperatures
- Reduce the need for air conditioning
- Contribute to greenhouse gas reduction goals with lower energy demand
- Comply with building energy codes and green energy programs

COOL ROOF LABELING REQUIREMENTS

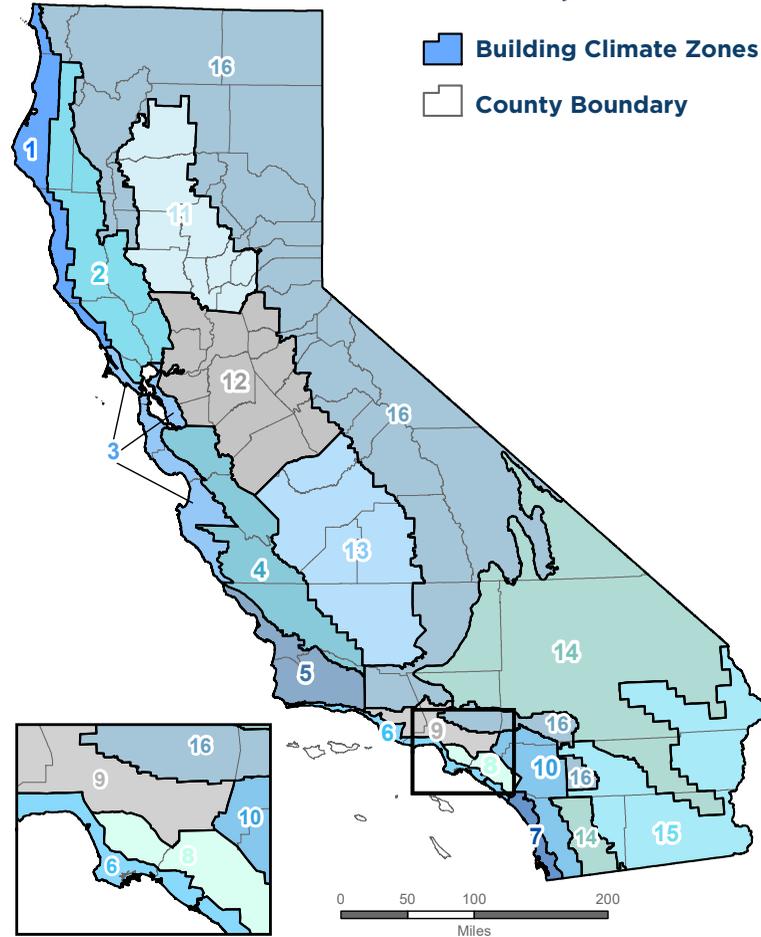
The Energy Commission designates the Cool Roof Rating Council (CRRC) for rating the solar reflectance and thermal emittance values of roofing products. Only the aged solar reflectance and thermal emittance values listed within the CRRC Rated Products Directory may be used to meet the cool roof requirements in the Energy Code. All rated roofing products will have a CRRC label, with the efficiency values listed per the requirements in § 10-113. Unlabeled products must use the default values per § 110.8(i)1. Products without an aged solar reflectance may use the equation in § 110.8(i)2.

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

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

Sample Cool Roof Rating Council Label.

Building Climate Zones California, 2017



ENERGY EFFICIENT

COOL ROOFS

Single-Family Residential

2022 Building Energy Efficiency Standards



Tile roof on single family home.

VISIT THE ENERGY COMMISSION ONLINE

For more information on the Energy Code and other programs

www.energy.ca.gov

Energy Code Online Resource Center

www.energy.ca.gov/orc

Contact the Energy Code Hotline

(800) 772-3300 within CA

(916) 654-5106 outside CA

title24@energy.ca.gov

Other Online Resources

Cool Roof Rating Council

www.coolroofs.org



ENERGY EFFICIENT ROOFS

Energy efficient roofs are also known as cool roofs. These roofs are designed to reflect more sunlight and absorb less heat than a standard roof. Energy efficient roofing products have high solar reflectance and thermal emittance properties. These properties help lower roof and attic temperatures on hot, sunny days to reduce the need for air conditioning. Both properties are measured from 0 to 1, and the higher the value the cooler the roof.

Solar reflectance (SR) refers to a material's ability to reflect the sun's solar energy back into the atmosphere.

Thermal emittance (TE) refers to how much of the absorbed heat is released.

2022 ENERGY CODE

The two approaches for compliance are performance and prescriptive. The performance approach requires using approved compliance software where energy trade-offs are allowed to bring the whole building into compliance with the Energy Code. The prescriptive approach has predefined efficiency requirements for each building component that must be met in order to comply.

The prescriptive requirements per § 150.1(c)11 listed below are the minimum efficiency requirements for roofing products. The values depend on the climate zone and the slope of the roof per TABLE 150.1-A. These requirements apply to single-family residential buildings that are mechanically heated or cooled (conditioned space). See § 150.2(b)11 for the prescriptive requirements for roofing alterations.

WHAT TRIGGERS THE ENERGY EFFICIENT ROOF REQUIREMENTS?

The prescriptive approach requires that roofs meet minimum aged SR and TE efficiencies or the minimum SRI for newly constructed buildings, additions, and alterations where more than fifty percent of the roof is replaced.

WHAT ARE THE EXCEPTIONS?*

All Building, Project, and Roof Slope Types:

- Roof area covered by integrated photovoltaic (PV) or solar thermal panels
- Roof constructions that have thermal mass over the roof membrane with a weight of at least 25 lb/ft²

Additions § 150.2(a)

- Additions 300 square feet or less

Alterations (re-roofs) § 150.2(b)II:

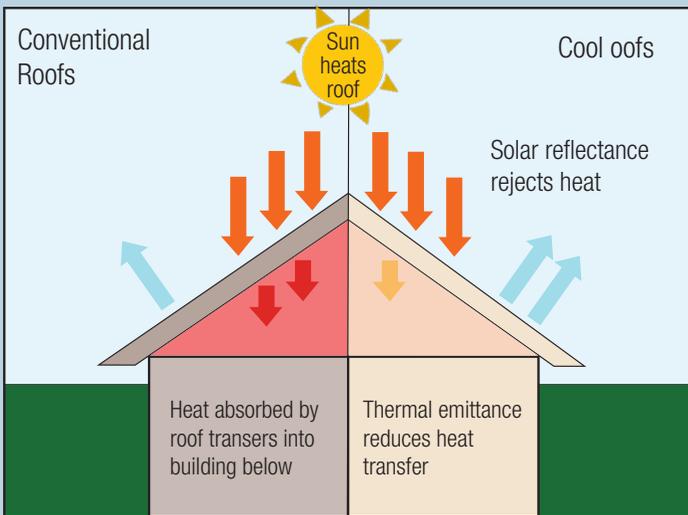
Steep-sloped in climate zones 4, 8-15:

- R-38 ceiling insulation or U-factor of 0.025 or lower
- Radiant barrier in attic per § 150.1(c)2
- No ducts in attic in climate zones 2, 4, 9, 10, 12 and 14
- R-2 or greater insulation at the roof deck

Low-sloped in climate zones 4, 6-15:

- Aged solar reflectance trade-off is allowed using the continuous insulation R-value per TABLE 150.2-B

*If building meets any of these exceptions, it is exempt



Solar reflectance and thermal emittance

WHAT IS THE SOLAR REFLECTANCE INDEX?

The solar reflectance index (SRI) is an alternative to meeting the minimum requirements for thermal emittance and aged solar reflectance in the prescriptive approach. The SRI calculation allows for trade-offs between thermal emittance and aged solar reflectance values. The Energy Commission's solar reflectance index calculator must be used to determine the SRI value. The calculator is available on the Energy Commission's website.

Single-Family Prescriptive Requirements

NEWLY CONSTRUCTED BUILDINGS*

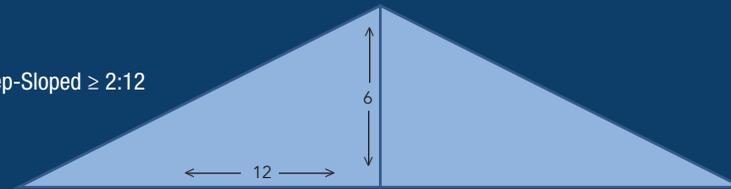
	CLIMATE ZONE	AGED SOLAR REFLECTANCE	THERMAL EMITTANCE & OR	SRI
L	13 & 15	≥0.63	≥0.75	≥75
SL	10-15	≥0.20	≥0.75	≥16

*Alterations requirements apply to additional climate zones

Low-Sloped < 2:12



Steep-Sloped ≥ 2:12



Roof Characteristics:

L Low-sloped, rise to run of less than 2:12

SL Steep-sloped, rise to run of 2:12 or greater



Cool roofs on new houses in Folsom, CA.