

Prescriptive Certificate of Compliance: Residential Reroof		CF-1R-ALT-ReRoof
Project Address:	Climate Zone	Permit #

ROOFING PRODUCTS (COOL ROOFS) §151(f)12

When the area of exterior roof surface to be replaced exceeds 50% of the existing roof area, or 1,000 ft², whichever is less, the new roofing area must meet the roofing product "Cool Roof" requirements of §152(b)1Hi, 152(b)1Hii, or 152(b)1Hiii.

Check applicable alternative or exception below if the roof alteration is exempt from the roofing product "Cool Roof" requirements.:

Cool roofs not required in Climates Zones 1-12, 14, and 16 with a low sloped roof pitch (less or 2:12 pitch).

Cool roofs not required in Climates Zones 1-9, and 16 with a steep-sloped roofs (greater pitch than 2:12) and product weight less than 5lb/ft².

Alternatives to §152(b)1Hi and §152(b)Hii, Steep-slope roof (pitch > 2:12)

Insulation with a thermal resistance of at least 0.85 hr·ft²·°F/Btu or at least a 3/4 inch air-space is added to the roof deck over an attic; or

Existing ducts in the attic are insulated and sealed according to §151(f)10; or

In climate zones 10, 12 and 13, with 1 ft² of free ventilation area of attic ventilation for every 150 ft² of attic floor area, and where at least 30 percent of the free ventilation area is within 2 feet vertical distance of the roof ridge; or

Building has at least R-30 ceiling insulation; or

Building has radiant barrier in the attic meeting the requirements of §151(f)2; or

Building has no ducts in the attic; or

In climate zones 10, 11, 13 and 14, R-3 or greater roof deck insulation above vented attic.

Exception to §152(b)1Hiii, Low-slope roof (pitch ≤ 2:12)

Building has no ducts in the attic.

Other Exceptions

Roofing area is covered by building integrated; photovoltaic panels and solar thermal panels are exempt from the Cool Roof criteria.

Roof constructions that have thermal mass over the roof membrane with at least 25 lb/ft² are exempt from the Cool Roof criteria.

NOTE: If any one of the alternatives or exception is checked the Aged Solar Reflectance and Thermal Emittance requirements for roofing products in §118(i) are not applicable. Do not fill table below.

CRRC Product ID Number ¹	Roof Slope		Product Weight		Product Type ²	Aged Solar Reflectance ^{3,4}		Thermal Emittance	SRI ⁵
	≤ 2:12	> 2:12	< 5lb/ft ²	≥ 5lb/ft ²		<input type="checkbox"/> ⁴			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴			

Note: If no CRRC-1 label is available, this compliance method cannot be used, use the Performance Approach to show compliance,

1. The CRRC Product ID Number can be obtained from the Cool Roof Rating Council's Rated Product Directory at www.coolroofs.org/products/search.php

2. Indicate the type of product is being used for the roof top, i.e. single-ply roof, asphalt roof, metal roof, etc.

3. If the Aged Reflectance is not available in the Cool Roof Rating Council's Rated Product Directory then use the Initial Reflectance value from the same directory and use the equation $(0.2+0.7(p_{initial} - 0.2))$ to obtain a calculated aged value. Where p is the Initial Solar Reflectance.

4. Check box if the Aged Reflectance is a calculated value using the equation above.

5. Calculate the SRI value by using the SRI- Worksheet at <http://www.energy.ca.gov/title24/> and enter the resulting value in the SRI Column above and attach copy of the SRI- Worksheet to the CF-1R.

To apply **Liquid Field Applied Coatings**, the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements listed in §118(i)4. Select the applicable coating:

Aluminum-Pigmented Asphalt Roof Coating Cement-Based Roof Coating Other _____

NOTE: When a Cool Roof is required, the installing contractor shall complete and submit the **CF-6R-ENV-01** for final inspection.

Declaration Statement

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is accurate and complete.
- I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Parts 1 and 6 of the California Code of Regulations.

Name:	Signature:
Company:	Date:
Address:	License:
City/State/Zip:	Phone:

For assistance or questions regarding the Energy Standards, contact the Energy Hotline at: 1-800-772-3300.

INSTALLATION CERTIFICATE: Residential Reroof

CF-6R-ENV-01

Site Address: _____

Enforcement Agency: _____

Permit Number: _____

If more than one person has responsibility for installation of the items on this certificate, each person shall prepare and sign a certificate applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign this certificate for the entire construction. All applicable Mandatory Measures with check boxes are required to be checked to ensure the mandatory measures have been met.

CEILING INSULATION

Rigid: _____

Brand Name: _____

Batt or Blanket Type: _____

Brand Name: _____

Loose Fill Type: _____

Thermal Resistance (R-Value): _____

Spray Foam Type: _____

Brand Name: _____

Installed Actual Thickness (inches): _____

Contractor's min installed weight/ft² _____ lb

Manufacturer's installed weight per square foot to achieve Thermal Resistance (R-Value):

§150(a): Minimum R-19 insulation in wood-frame ceiling or equivalent U-factor.

§118(a): Insulation installed meets Standards for Insulating Material.

§150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

ROOFING PRODUCTS (COOL ROOFS) §151(f)12

Check this box if the newly installed roof is exempted from the roofing product "Cool Roof" requirements as indicated on the CF-1R-Alt-Reroof form for this project. Otherwise fill in the table below.

CRRC Product ID Number ¹	Roof Slope		Product Weight		Product Type ²	Aged Solar Reflectance ^{3,4}		Thermal Emittance
	≤ 2:12	> 2:12	< 5lb/ft ²	≥ 5lb/ft ²				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		

1. CRRC-1 label information is available is on the package of the roofing product being installed and attach the CRRC label to this form.
2. Indicate the type of product is being used for the roof top, i.e. single-ply roof, asphalt roof, metal roof, etc.
3. If the Aged Reflectance is not available in the Cool Roof Rating Council's Rated Product Directory then use the Initial Reflectance value from the same directory and use the equation $(0.2+0.7(p_{initial}-0.2))$ to obtain a calculated aged value. Where p is the Initial Solar Reflectance.
4. Check box if the Aged Reflectance is a calculated value using the equation above.

To apply **Liquid Field Applied Coatings**, the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements listed in §118(i)4. Select the applicable coating:

Aluminum-Pigmented Asphalt Roof Coating Cement-Based Roof Coating Other _____

DECLARATION STATEMENT

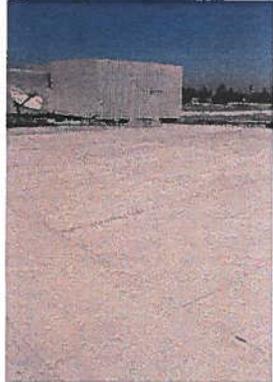
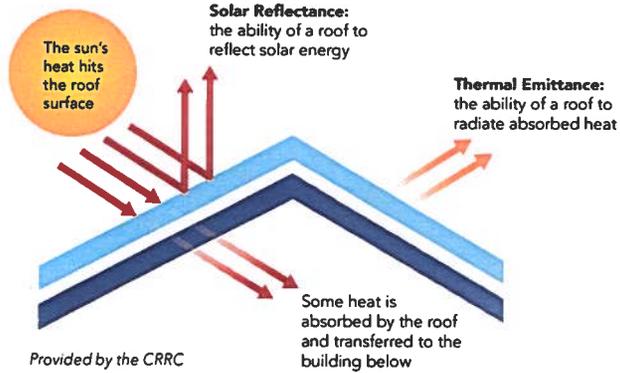
- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
- I reviewed a copy of the Certificate of Compliance (CF-1R) form approved by the enforcement agency that identifies the specific requirements for the installation. I certify that the requirements detailed on the CF-1R that apply to the installation have been met.
- **I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy.**

Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:		Responsible Person's Signature:
CSLB License:	Date Signed:	Position With Company (Title):

» COOL ROOFS

WHAT IS A COOL ROOF?

The term cool roof refers to a roofing product with high solar reflectance (SR) and thermal emittance (TE) properties. These properties help reduce electricity used for air conditioning by lowering roof temperatures on hot, sunny days. *Solar reflectance* refers to a material's ability to reflect the sun's solar energy back into the atmosphere. *Thermal emittance* provides a means of quantifying how much of the absorbed heat is rejected for a given material. Both properties are measured from 0 to 1 and the higher the value, the 'cooler' the roof.



Coating for a low-sloped roof
Photo credit: DNG Group

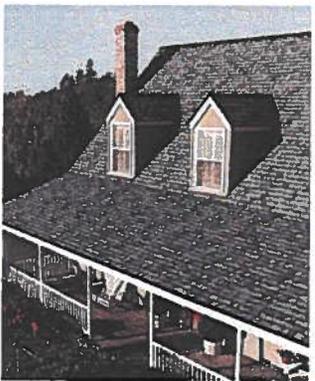
WHAT IS THE SOLAR REFLECTANCE INDEX (SRI)?

SRI combines SR and TE in an equation. It allows for trade-offs between SR and TE values used under the prescriptive compliance approach. SRI values range from 0 to 100, with the higher value, the better.



COOL ROOF REQUIREMENTS

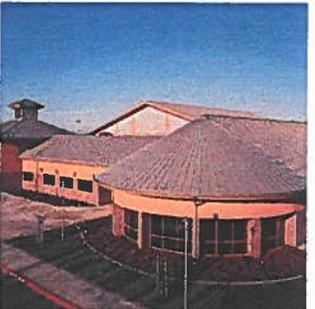
The Cool Roof Rating Council (CRRC), at www.coolroofs.org, is the sole entity the California Energy Commission recognizes for certifying the solar reflectance and thermal emittance values of roofing products. Only reflectance and emittance values listed within the CRRC's Rated Products Directory may be used to meet cool roof requirements. Products that meet CRRC certification requirements will feature the CRRC label.



A residential cool roof
Photo credit: Owens Corning Roofing & Asphalt, LLC

BENEFITS OF COOL ROOFS:

- Energy and cost savings can be 20% depending on materials, climate zone, & electricity rates.¹
- Improved occupant comfort
- Compliance with building energy standards and green energy programs
- Reduce air pollution and greenhouse gas emissions
- Lasts longer than standard roofs



A non-residential cool roof
Photo credit: Cool Metal Roofing Coalition

DO I NEED A BUILDING PERMIT FOR A RE-ROOF?

It depends. Check with your local building department. A contractor is required to be licensed by the Contractors State Licensing Board for any construction project valued at over \$500 in labor and materials.

1. LBL.gov



COOL ROOF MATERIALS

There are numerous materials in a wide range of colors that meet cool roof requirements. As shown on this brochure, tile, metal, asphalt, and coating materials may meet cool roof requirements.

Cool Roof tile samples. Photo Credit: Eagle Roofing

THE 2013 BUILDING ENERGY EFFICIENCY STANDARDS FOR COOL ROOFS:

There are two approaches for compliance: performance and prescriptive.

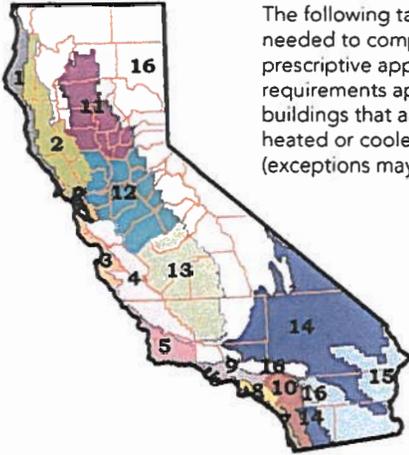
The performance approach refers to how the entire building complies with energy efficiency standards using certified computer modeling programs.

The prescriptive approach has specific requirements for each part of the building (insulation, windows, etc.). For cool roof compliance, you must show:

- Solar reflectance values based on their reflectance properties after 3 years (known as "aged, or weathered, reflectance") as opposed to their initial values. If aged solar reflectance values are not available, the following formula may be used:

$$\rho_{aged} = 0.2 + \beta(\rho_{initial} - 0.2)$$
- * $\rho_{initial}$ = solar reflectance from the Cool Roof Rating Council directory
- * β is listed by product type in Table 110.8-B (Field-Applied Coating = 0.65, not a Field-Applied Coating = 0.70)
- Thermal emittance values
- Solar Reflectance Index (SRI) as an alternative to solar reflectance and thermal emittance values

What are the minimum requirements to demonstrate compliance with the Building Energy Efficiency Standards?



The following tables show values needed to comply under the prescriptive approach. These requirements apply only to buildings that are mechanically heated or cooled (exceptions may apply).



CEC-400-2016-021-BR
For alternatives and exceptions to these requirements:

California
COOL ROOFS

2013 Building Energy Efficiency Standards

CONTACT

Energy Standards Hotline:
(800) 772-3300
title24@energy.ca.gov

RESOURCES

www.coolroofs.org
www.energy.ca.gov/title24/orc

LOW-RISE RESIDENTIAL 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

NONRESIDENTIAL BUILDINGS

	CLIMATE ZONE	AGED SOLAR REFLECTANCE &	THERMAL EMITTANCE OR	SRI
L	1-16	≥ 0.63	≥ 0.75	≥ 75
SL	1-16	≥ 0.20	≥ 0.75	≥ 16

HIGH-RISE RESIDENTIAL, HOTELS, AND MOTELS

	CLIMATE ZONE	AGED SOLAR REFLECTANCE &	THERMAL EMITTANCE OR	SRI
L	9*,10,11,13,14,15	≥ 0.55	≥ 0.75	≥ 64
SL	2-15	≥ 0.20	≥ 0.75	≥ 16

* DOES NOT APPLY TO ALTERATIONS

ROOF CHARACTERISTICS

L	Low-sloped, rise to run of 2.12 or less	SL	Steep-sloped, rise to run of greater than 2.12
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Tax credits and rebates may be available for cool roofs. Check with your local utility company and the IRS.

