



Re-Roofing and the 2008 California Residential Energy Compliance Requirements for Cool Roofs

Important information you need to know BEFORE obtaining a re-roof permit! The California Energy Commission (CEC) has adopted new requirements for re-roofing projects.

Beginning January 1, 2010 when more than 50% of the exterior surface of the roof or more than 1,000-sq. ft. of roof is replaced, whichever is less, the roofing product must meet the following prescriptive requirements for Cool Roofs.

For roof slopes of greater than 2:12:

1. Roofing products with a density of less than 5lbs/sq.ft. (i.e. Asphalt shingles) shall have a minimum 3-year aged solar reflectance of 0.20 and a minimum thermal emittance of 0.75, or a Solar Reflectance Index (SRI) of 16.
2. Roofing products with a density of 5lbs/sq.ft. or more (i.e. Concrete, clay tiles or slate) shall have a minimum 3-year aged solar reflectance of 0.15 and a minimum thermal emittance of 0.75, or a SRI of 10.

Or,

Alternatives to the Cool Roof requirement may be one of the following:

1. Insulation with a thermal resistance of at least 0.85hr.ft².°F/Btu or at least ¾ inch airspace is added to the roof deck over an attic; or
2. If existing ducts in the attic are insulated and sealed according to CEC Regulations §151(f) 10; or
3. 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
4. Buildings with at least R-30 ceiling insulation; or
5. If the building with a radiant barrier in the attic meeting the requirements of §151(f) 2; or

6. Buildings with no ducts in the attic; or

7. If in climate Zones 10, 11, 13, and 14, R-3 or greater roof deck insulation above vented attic.

A Certificate of Compliance Energy Form "**CF-1R-ALT**" must be completed and submitted with the permit application. The "**CF-1R-ALT**" form must be signed by the documentation Author and the Building Designer (i.e. Contractor or Home Owner).

At Final Inspection an Installation Certificate Form "**CF-6R-ENV-01**" must be completed by the installing contractor and submitted to the owner and the building department. Roofing products that are used for compliance with the energy standards are required to be tested and labeled by the 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 Rated Product Directory (see <http://www.coolroofs.org>) and be labeled according to CRRC procedures. Below is an example of an approved CRRC product label.

		Initial	Weathered
	Solar Reflectance	0.00	Pending
	Thermal Emittance	0.00	Pending
	Rated Product ID Number		_____
	Licensed Seller ID Number		_____
	Classification		Production Line
<p>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.</p> <p>Manufacturer of product stipulates that these ratings were determined in accordance with the applicable Cool Roof Rating Council procedures.</p>			

Attached are the CF-1R-ALT and the CF-6R-ENV-01 forms for your use. To obtain additional CF-1R-ALT and CF-6R-ENV-01 forms or for more information please visit the California Energy Commissions webpage at: www.energy.ca.gov.

RESIDENTIAL ALTERATIONS



Prescriptive Certificate of Compliance: Residential		CF-1R-ALT
<i>Residential Alterations</i>		(Page 4 of 7)
Project Name:	Climate Zone #	# of Stories

ROOFING PRODUCTS (COOL ROOFS) §151(f)12								
<i>When the area of exterior roof surface to be replaced exceeds more than 50% of the existing roof area, or more than 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.</i>								
<i>Check applicable alternative or exception below if the roof alteration is exempt from the roofing product "Cool Roof" requirements. Note: If any one of the alternatives or exception below is checked, the Aged Solar Reflectance and Thermal Emittance requirements for roofing products in §118(i) are not applicable. Do not fill table below.</i>								
<input type="checkbox"/> Cool Roofs <u>Not</u> Required in Climate Zones 1-12, 14, and 16 with a Low Sloped. Less or 2:12 pitch. <input type="checkbox"/> Cool Roofs <u>Not</u> Required in Climate Zones 1 through 9 and 16 with a Steep-Sloped Roofs (pitch greater than 2:12) and product unit weight less than 5lb/ft ² .								
Alternatives to §152(b)1Hi and §152(b)Hii, Steep-slope roof (pitch > 2:12)								
<input type="checkbox"/> Insulation with a thermal resistance of at least 0.85 hr-ft ² -°F/Btu or at least a 3/4 inch air-space is added to the roof deck over an attic; or <input type="checkbox"/> Existing ducts in the attic are insulated and sealed according to §151(f)10; or <input type="checkbox"/> In climate zones 10, 12 and 13, with 1 ft ² of free ventilation area of attic ventilation for every 150 ft ² 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 <input type="checkbox"/> Building has at least R-30 ceiling insulation; or <input type="checkbox"/> Building has radiant barrier in the attic meeting the requirements of §151(f)2; or <input type="checkbox"/> Building has no ducts in the attic; or <input type="checkbox"/> 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)								
<input type="checkbox"/> Building has no ducts in the attic.								
Other Exceptions								
<input type="checkbox"/> Roofing area covered by building integrated; photovoltaic panels and solar thermal panels are exempt from the below Cool Roof criteria. <input type="checkbox"/> Roof constructions that have thermal mass over the roof membrane with at least 25 lb/ft ² is exempt from the below Cool Roof criteria.								
Note: If no CRRC-1 label is available, this compliance method cannot be used, use the Performance Approach to show compliance, otherwise. Check the applicable box below if Exempt from the Roofing Products "Cool Roof" Requirement:								
CRRC Product ID Number ¹	Roof Slope ≤ 2:12	Roof Slope > 2:12	Product Weight < 5lb/ft ²	Product Weight ≥ 5lb/ft ²	Product Type ²	Aged Solar Reflectance ^{3,4}	Thermal Emittance	SRI ⁵
	<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		
	<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		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		
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:								
<input type="checkbox"/> Aluminum-Pigmented Asphalt Roof Coating			<input type="checkbox"/> Cement-Based Roof Coating			<input type="checkbox"/> Other _____		

INSTALLATION CERTIFICATE**CF-6R-ENV-01****Envelope – Insulation; Roofing; Fenestration****(Page 1 of 3)**

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 require to be checked to ensure the mandatory measures have been met.

Description of Insulation**1. RAISED FLOOR**

Material: _____

Brand Name: _____

Thickness (inches): _____

Thermal Resistance (R-Value): _____

 §150(d): Minimum R-13 insulation in raised wood-frame floor or equivalent U-factor.**2. SLAB FLOOR/PERIMETER**

Material: _____

Brand Name: _____

Thickness (inches): _____

Thermal Resistance (R-Value): _____

Perimeter Insulation Depth (inches): _____

 §150(l): Water absorption rate for the insulation material alone without facings is no greater than 0.3%; water vapor permeance rate is no greater than 2.0 perm/inch and shall be protected from physical damage and UV light deterioration.**3. EXTERIOR WALL**

a. Insulation Type (e.x. Batt, Loose Fill, Spray Foam)

a. Thermal Resistance (R-Value): _____

b. Insulation Type (e.x. Batt, Loose Fill, Spray Foam)

b. Thermal Resistance (R-Value): _____

Brand: _____

Spray/Loose fill) Installed Actual Thickness (inches): _____

Spray/Loose fill)
Contractor's min installed weight/ft² _____ lb

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

 §150(c): Minimum R-13 insulation in wood-frame wall or equivalent U-factor.**Exterior Foam Sheathing (rigid Insulation)**

Material: _____

Brand Name: _____

Thickness (inches) : _____

Thermal Resistance (R-Value) : _____

4. FOUNDATION WALL

Material: _____

Brand Name: _____

Thickness (inches): _____

Thermal Resistance (R-Value): _____

5. CEILING

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.**6. ATTIC ROOF INSULATION AND/OR ATTIC RADIANT BARRIER**

Material: _____

Brand Name: _____

Material: _____

Brand Name: _____

Thickness (inches): _____

Thermal Resistance (R-Value): _____

 §118(a): Insulation installed meets Standards for Insulating Material. §150(g): Mandatory Vapor barrier installed in Climate Zones 14 or 16.

INSTALLATION CERTIFICATE

CF-6R-ENV-01

Envelope – Insulation; Roofing; Fenestration

(Page 2 of 3)

Site Address:

Enforcement Agency:

Permit Number:

Description of Roofing Products

CRRC Product ID Number ¹	Manufacturer Information	Brand/Model	Product Type	Roof Area	Roof Slope	Product Weight ²	Initial Solar Reflectance	Aged Solar Reflectance ⁴	Thermal Emittance
								<input type="checkbox"/> ³	
								<input type="checkbox"/> ³	
								<input type="checkbox"/> ³	

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. The weight in lbs per square feet of the roofing product being installed.

3. Check box if the Aged Reflectance is a calculated value using the equation below, footnote 4.

4. 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 directory and use the equation $(0.2 + 0.7(p_{\text{initial}} - 0.2))$ to obtain a calculated aged value.

CHECK APPLICABLE BOX BELOW IF EXEMPT FROM THE ROOFING PRODUCT "COOL ROOF" REQUIREMENT

The roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are exempt from the above Cool Roof criteria.

Roof constructions that have thermal mass over the roof membrane with a weight of at least 25 lb/ft² is exempted from the above Cool Roof criteria.

To apply Liquid Field Applied Coatings, the coating must be applied with a minimum dry mil thickness of 20 mils across the entire roof surface and meet minimum performance requirements listed in §118(i)3 and Table 118-C. Select the applicable coating

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

CRRC-1 Label Attached to CF-6R

(Note if no CRRC-1 label is available, this compliance method cannot be used and another method is required to meet compliance).

FENESTRATION/GLAZING

Item	Manufacturer/Brand Name (GROUP LIKE PRODUCTS)	Product U-factor ¹	Product SHGC ¹	# of Panes	NFRC Certified ^{1,2}	Total Quantity of Like Product (Optional)	Area ft ²	Add. Exterior Shading Dev. or Overhang	Comments/ Location/ Special Features
1									
2									
3									
4									
5									
6									
7									
8									

1. Use values from a fenestration product's NFRC Certified Label. For fenestration products without an NFRC label, use the default values from Section 116, Table 116-A and 116-B of the 2008 Energy Efficiency Standards.

2. NFRC Label Certificates shall not be removed until the building inspector has verified the efficiency. Enter Yes or No.

§116(a)1: Doors and windows between conditioned and unconditioned spaces designed to limit air leakage.

§116(a)2 and 3: Actual fenestration products installed are equivalent to or have a lower U-factor and/or a lower SHGC than that specified on the Certificate of Compliance (Form CF-1R).

§116(a)4: Fenestration products (except field-fabricated windows) have a label listing the certified U-Factor, certified Solar Heat Gain Coefficient (SHGC), and infiltration that meets the requirements of §10-111(a)

§117: Exterior doors and windows weather-stripped; all joints and penetrations caulked and sealed.

INSTALLATION CERTIFICATE		CF-6R-ENV-01
Envelope – Insulation; Roofing; Fenestration		(Page 3 of 3)
Site Address:	Enforcement Agency:	Permit Number:

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):