

**RESIDENTIAL ALTERATIONS**

CEC-CF1R-ALT-01-E (Revised 08/14)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF COMPLIANCE		CF1R-ALT-01-E
Prescriptive Residential Alterations		(Page 1 of 2)
Project Name:	Date Prepared:	

**A. GENERAL INFORMATION**

01	Project Name:		02	Date Prepared:	
03	Project Location:		04	Building Front Orientation (deg or cardinal):	
05	CA City:	Walnut Creek	06	Number of Altered Dwelling Units:	
07	Zip Code:		08	Fuel Type:	
09	Climate Zone:	12	10	Total Conditioned Floor Area (ft <sup>2</sup> ):	
11	Building Type:		12	Slab Area (ft <sup>2</sup> ):	
13	Project Scope:				

**C. ROOF REPLACEMENT (Prescriptive Alteration, Section 150.2(b)1H)**

01	02	03	04	05	06	07	08	09	10	11	12	13
Method of Compliance	Roof Pitch	Exception	CRRC Product ID Number	Product Type	R-value Deck Insulation	Proposed				Minimum Required		
						Initial Solar Reflectance	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)	Aged Solar Reflectance	Thermal Emittance	SRI (Optional)

**NOTES**

- Roof area covered by building integrated photovoltaic panels and solar thermal panels are exempt from the above Cool Roof requirements.
- Liquid field applied coatings must comply with installation criteria from section 110.8(i)4.

**C. ROOF REPLACEMENT (Prescriptive Alteration, Section 150.2(b)1H)**

When 50% or more of the roof is being replaced the roofing requirements are triggered. Any areas of roof covered by building integrated photovoltaic panels and solar thermal panels (the area of roof not covered by photovoltaic panels would still need to meet any applicable cool roof requirements). Additionally, there are many alternatives/exceptions when a cool roof is required.

When the roof is steep slope (pitch greater than 2:12) the roof requirements include a cool roof in climate zones 10-15. The minimum requirement is 0.20 aged solar reflectance, 0.75 thermal emittance, or a minimum SRI of 16.

- Method of Compliance: indicate if the method of compliance is going to be based on Aged Solar Reflectance and Thermal Emittance, the Solar Reflectance Index (SRI), or an Exception.
- Roof Pitch: Expressed as 4:12, for example, which means the roof rises 4 foot within a span of 12 feet. When roofs have multiple pitches the requirements are based on the pitch of 50% or more of the roof.
- Exception: If meeting one of the exceptions. Indicate which exception is, or will be, met.

**NOTES: EXCEPTIONS AND ALTERNATIVES FOR STEEP SLOPE ROOFS:**

- Mass roof 25 lbs/ft<sup>2</sup> or greater (uncommon situation such as sod roof);
- Air space 1" from top of roof deck to bottom of roofing;
- Roofing product has a profile ratio of rise to width of 1 to 5 for 50 percent or greater of the width of the roofing product;
- Ducts already meet Section 150.1(c) insulation and duct leakage requirements;
- Roof has R-38 insulation;
- Roof has a radiant barrier;
- No ducts are installed in the attic; or
- R-4 insulation above the roof deck.

In climate zones 13-15, when there is a low slope roof (pitch 2:12 or less) the cool roof requirements are for a minimum aged solar reflectance of 0.63, a minimum 0.75 thermal emittance, or a minimum SRI of 75.

**EXCEPTIONS AND ALTERNATIVES FOR LOW SLOPE ROOFS:**

- Mass roof 25 lbs/ft<sup>2</sup> or greater (uncommon situation such as sod roof);
- No ducts are installed in the attic; or
- Roof deck installation—by installing roof deck insulation, a lower aged solar reflectance is required: R-2 (0.62-0.60), R-4 (0.59-0.55), R-6 (0.54-0.50), R-8 (0.49-0.45), R-12 (0.44-0.40), R-16 (0.39-0.35), R-20 (0.34-0.30), R-24 (0.29-0.25).

**NOTE: If one of the exceptions above has been selected than the rest of Section c is Not Required.**

- The CRRC Product ID Number is obtained from the Cool Roof Rating Council's Rated Product Directory at [www.coolroofs.org/products/results](http://www.coolroofs.org/products/results). Products are listed by manufacturer, brand, type of installation, roofing material, and color, as well as product performance.
- Product type: See Cool Roof Rating Council's directory. Generally product types include single-ply roof, wood shingles, asphalt roof, metal roof, tile roof.
- R-value Deck Insulation: If one of the exceptions selected includes adding roof deck insulation, indicate the R-value of insulation.
- Proposed Initial Solar reflectance: base on the product chosen from the Cool Roof Rating Council's Rated Product Directory. If using default assumption indicate NA since the Aged solar reflectance is available.

8. Proposed Aged Solar Reflectance: Value is from the Cool Roof Rating Council's Rated Product Directory. If the aged value is not available, calculate the calculated Aged Solar reflectance using the Solar Reflectance Index (SRI) Calculation worksheet located on the California Energy Commission website or the aging equation  $\rho_{aged}=[0.2+\beta(\rho_{initial}-0.2)]$ , where  $\rho_{initial}$  = the initial solar reflectance and soiling resistance  $\beta$  is listed by product type below.

VALUES OF SOILING RESISTANCE  $\beta$  BY PRODUCT TYPE

Product Type	CRRC Product Category	$\beta$
Field-Applied Coating	Field-Applied Coating	0.65
Other	Not A Field-Applied Coating	0.70

9. Proposed Thermal Emittance: From the product specification default value. If using a calculated SRI place the thermal emittance used to calculate SRI.
10. Proposed SRI: It is optional to meet either the SRI but if chosen to do so, use the Solar Reflectance Index (SRI) Calculation Worksheet found on the California Energy Commission website <http://www.energy.ca.gov/title24/>.
11. Minimum Required Aged Solar Reflectance: Based on climate zone and roof slope.
12. Minimum Required Thermal Emittance: Based on climate zone and roof slope.
13. Minimum SRI: Based on climate zone and roof slope.

NOTE: If the cool roofing requirements will be met by a liquid field applied coating, Section 110.8(i)4 requires the coating be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the manufacturer.