

ENVELOPE COMPONENT APPROACH

Project Name:	Date:	Climate Zone:
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EXTERIOR ROOFING PRODUCT (COOL ROOFS) - See Section 3.3 in the *Nonresidential Manual* and §118(i) and §143(a)1A in the *Energy Standards* for further description about exterior roofs and mandatory requirements for Cool Roofs.

(Note if the roofing product is not CRRC certified, this compliance approach cannot be used). Go to Overall Envelope Approach or Performance Approach.

CHECK APPLICABLE BOX BELOW IF EXEMPT FROM ONE OF THE ROOFING PRODUCT MINIMUM PRESCRIPTIVE REQUIREMENTS:

- Roofing compliance not required in Climate Zones 1 and 16 with a Low-Sloped. 2:12 pitch or less.
- Roofing compliance Not Required in Climate Zone 1 with a Steep-Sloped with less than 5 lb/ft². Greater than 2:12 pitch.
- High-rise residential buildings and hotels and motels with low-sloped roofs in Climate Zones 1 through 9, 12 and 16 are exempted from the low-sloped roofing criteria.
- Low-sloped Wood framed roofs in Climate Zones 3 and 5 are exempted solar reflectance and thermal emittance or SRI that have a U-factor of 0.039 or lower. See Opaque Surface Details roof assembly below, Column H.
- Low-sloped Metal Building Roofs in Climate Zones 3 and 5 are exempted solar reflectance and thermal emittance or SRI that have a U-factor of 0.048 or lower. See Opaque Surface Details roof assembly below, Column H.
- The roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are exempted solar reflectance and thermal emittance or SRI.
- Roof constructions with thermal mass over the roof membrane with a weight of at least 25 lb/ft² is exempted from the Cool Roof criteria.

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"/>	<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		
	<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 $(0.2 + 0.7(\rho_{initial} - 0.2))$ to obtain a calculated aged value. Where ρ 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 acopy of the SRI- Worksheet to the ENV-1C.

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 _____
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SKYLIGHT AREA CALCULATION See §143(a)6A in the Energy Standards

	ACTUAL GROSS ROOF AREA		STANDARD ALLOWED SKYLIGHT AREA
A IF Atrium/Skylight Height is ≤ 55 ft; or		$ft^2 \times 0.05 =$	ft^2
B. IF Atrium/Skylight Height is > 55 ft		$ft^2 \times 0.10 =$	ft^2
C. Proposed Skylight Area		ft^2	
D. Skylight % = Proposed Skylight Area <u>Divided</u> by Actual Gross Roof Area =			%

If the PROPOSED SKYLIGHT AREA is greater than the STANDARD ALLOWED SKYLIGHT AREA then the Envelope Component Approach may not be used. The skylight percentage determines the appropriate row for the maximum U-factor allowed TO BE USED IN THE Skylight Details. See Table 143-A, B or C.

SKYLIGHTS DETAILS See §143(a)6 in the Energy Standards

A	SKYLIGHT GLAZING			U-FACTOR			SHGC			
	B	C	D	E	F	G	H	I	J	K
SKYLIGHT NAME (e.g., Sky-1, Sky-2)	Glass With Curb	Glass With No Curb	Plastic	Area ¹	Type ²	# Of Panes	Proposed	Allowed ³	Proposed	Allowed ⁴
	<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"/>	<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"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

Total Skylight Area

Enter above the Total Skylight Area in Window Details ENV-2C Page 3of 4.

1. Enter the area of each different skylight product.
2. Enter the type of skylight; M=Manufactured, SB=Site-built, and F=Fabricated.
3. The Allowed U-factor and SHGC values are from table 143-A, B or C. Use Row D Skylight % (from above) to select the allowed SHGC.
4. If the Proposed window does not use an overhang then fenestration SHGC is treated the same as RSHG.

RELOCATABLE PUBLIC SCHOOL BUILDINGS - See §143(a)8 in the Energy Standards

Option 1

<input type="checkbox"/> For Specific Climate Zone, use Table 143-A - Prescriptive Envelope Criteria.	<input type="checkbox"/> Specific Climate Zone Metal Identification Label – Place two labels on each relocatable school building and indicate on the building plans. Indicate location on the building plans:
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Option 2

<input type="checkbox"/> For Any (All) Climate Zone, use Table 143-C - Prescriptive Envelope Criteria.	<input type="checkbox"/> Any (All) Climate Zone Metal Identification Label - Place two labels on each relocatable school building and indicate on the building plans. Indicate location on the building plans:
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