



City of Huntington Beach
Department of Building & Safety
COOL ROOF REQUIREMENTS

2000 Main Street, Huntington Beach, CA 92648
 Office: (714) 536-5241 Fax: (714) 374-1647

COOL ROOF PRESCRIPTIVE REQUIREMENTS
2008 California Building Energy Efficiency Standards
City of Huntington Beach Climate Zone = 6

Residential Requirements (Sec. 152(b)1H)

Replacements of the exterior surface of existing roofs where more than 50 percent of the roof or more than 1,000 sq. feet of roof, whichever is less, is being replaced shall meet the following prescriptive requirements for new construction:

Roof Slope*	Roofing Weight	Minimum Aged Reflectance / Thermal Emittance	Minimum Solar Reflectance Index (SRI)
Low slope	All	Cool roof is NOT required	
Steep slope	Less than 5 lb/ft ²	Cool roof is NOT required	
Steep slope	5 lb/ft ² or more	0.15 / 0.75	10

* Low slope roof is surface with pitch less than or equal to 2:12; Steep slope roof is pitch greater than 2:12

Alternative to Prescriptive Requirements

The following shall be considered equivalent to the prescriptive requirements:

- a. Buildings that have no ducts in the attic; OR
- b. Buildings with at least R-30 ceiling insulation; OR
- c. Insulation with a thermal resistance of at least R-0.85 or at least a 3/4 inch air-space is added to the roof deck over an attic; OR
- d. Existing ducts in the attic are insulated and sealed and tested to altered existing duct requirements; OR
- e. Buildings with a radiant barrier in the attic that is certified by Department of Consumer Affairs

Non-Residential Requirements (Sec. 143(a)1 and 149(b)1B)

For nonresidential buildings, high-rise residential buildings, and hotels/motels, where more than 50 percent of the roof or more than 2,000 square feet of roof, whichever is less, is being replaced, recovered or recoated, this altered roof area shall meet the following prescriptive requirements for new construction:

Roof Slope*	Roofing Weight	Minimum Aged Reflectance / Thermal Emittance	Minimum Solar Reflectance Index (SRI)
Low slope	All	0.55 / 0.75	64
Steep slope	Less than 5 lb/ft ²	0.20 / 0.75	16
Steep slope	5 lb/ft ² or more	0.15 / 0.75	10

* Low slope roof is surface with pitch less than or equal to 2:12; Steep slope roof is pitch greater than 2:12

Exceptions to Prescriptive Requirements

1. Roof recoverings are not required to meet the prescriptive requirements when all of the following occur:
 - a. The existing roof has a rock or gravel surface; AND
 - b. The new roof has a rock or gravel surface; AND
 - c. There is no removal of existing layers of roof coverings of more than 50 percent of the roof or more than 2,000 square feet of roof, whichever is less; AND
 - d. There is no recoating with a liquid applied coating; AND
 - e. There is no installation of a recover board, rigid insulation or other rigid smooth substrate to separate and protect the new roof recovering from the existing roof

2. If the roofing product does not meet the prescriptive requirements, then the Overall Envelope TDV Energy Approach of Section 143(b) may be used and the standard building shall be based on the higher roof/ceiling insulation value of the following:
 - a. For low-sloped roofs, the insulation values specified in Table 149-A.
 - b. For steep-sloped roofs, the insulation values specified in Section 143(a); or
 - c. The existing installed insulation.

Non-Residential Insulation Requirements (Sec. 149(b)1Biv)

For nonresidential buildings, high-rise residential buildings and hotels and motels, when low-sloped roofs are exposed to the roof deck or to the recover boards, the exposed area shall be insulated to the levels specified in Table 149-A:

Nonresidential		High-rise Residential and Guest Rooms of Hotel/Model Buildings	
Continuous Insulation R-value	U-factor	Continuous Insulation R-value	U-factor
R-8	0.081	R-14	0.055

Exceptions to Insulation Requirements

1. The existing roof is insulated with at least R-7 insulation or it has a U-factor lower than 0.089.
2. If mechanical equipment is located on the roof and it will not be disconnected and lifted as part of the roof replacement, insulation added may be limited to the maximum insulation thickness that will allow a height of 8 inches (203 mm) from the roof membrane surface to the top of the base flashing.
3. If adding the required insulation will reduce the base flashing height to less than 8 inches (203 mm) at penthouse or parapet walls, the insulation added may be limited to the maximum insulation thickness that will allow a height of 8 inches (203 mm) from the roof membrane surface to the top of the base flashing, provided that the conditions in subsections i through iv apply:
 - i. The penthouse or parapet walls are finished with an exterior cladding material other than the roofing covering membrane material; AND
 - ii. The penthouse or parapet walls have exterior cladding material that must be removed to install the new roof covering membrane to maintain a base flashing height of 8 inches (203 mm); AND
 - iii. For nonresidential buildings, the ratio of the replaced roof area to the linear dimension of affected penthouse or parapet walls shall be less than 25 square feet per linear foot for climate zones 2 and 10 through 16, and less than 100 square feet per linear foot for climate zones 1 and 3 through 9; AND
 - iv. For high-rise residential buildings, hotels or motels, the ratio of the replaced roof area to the linear dimension of affected penthouse or parapet walls shall be less than 25 square feet per linear foot for all climate zones.
4. Tapered insulation may be used which has a thermal resistance less than that prescribed in Table 149-A at the drains and other low points, provided that the thickness of insulation is increased at the high points of the roof so that the average thermal resistance equals or exceeds the value that is specified in Table 149-A.

Equation for Aged Solar Reflectance (ASR) Value

$$\text{Aged Solar Reflectance}_{\text{calculated}} = (0.2 + 0.7 [\rho_{\text{initial}} - 0.2])$$

where ρ_{initial} = Initial Reflectance listed in the CRRR Rated Product Directory.

Therefore: ASR = 0.15 requires minimum $\rho_{\text{initial}} = 0.13$
 ASR = 0.20 requires minimum $\rho_{\text{initial}} = 0.20$
 ASR = 0.55 requires minimum $\rho_{\text{initial}} = 0.70$

Resources

- California Energy Commission: <http://www.energy.ca.gov/title24/>
- California Energy Commission Hotline: 800-772-3300 / title24@energy.state.ca.us
- Cool Roof Rating Council: www.coolroofs.org / 866-465-2523
- CABEC (Calif. Assoc. of Building Energy Consultants) www.cabec.org / 866-360-4002