



## **CALIFORNIA'S TITLE 24** **CHANGES AFFECTING ROOFING IN 2005**

Effective approximately October 2005, Cool Roofs will be mandatory in California when installing a new roof, re-roofing or recoating if the following conditions exist:

- The roof covers non-residential construction, high-rise residential, or hotel-motel occupancy (hotels have some exceptions)
- Slope is less than 2:12
- It is over air conditioned space and
- A permit is required.

Title 24 is written by the California Energy Commission ("CEC") and is made part of California's building code. It addresses all kinds of energy requirements for HVAC, lighting, windows and walls as well as roofs. These changes now make a "cool" roof the base line for all non-residential buildings.

To qualify as a Cool Roof the material must meet

- Minimum 70% Reflectance
- Minimum Thermal Emittance of 75%
- And be CRRC labeled with these values

If a coating is used to achieve a cool roof, the coating system must be applied at a rate to achieve a minimum dry mil thickness of 20 dry mills (more for cementitious coatings) and meet the following minimum physical properties:

**Table 118-C**

### **Minimum Performance Requirements for Liquid Roof Coatings**

Physical Property	ASTM Test Procedure	Requirement
Initial percent elongation (break)	D2370	Minimum 60% 0° F. Minimum 200% 73° F.
Initial tensile strength (maximum stress)	D2370	Minimum 100 psi 73° F. Minimum 200 psi 0° F.
Final percent elongation (break) after accelerated weathering 1000	D2370	Minimum 40% 0° F. Minimum 100% 73° F.
Permeance	D1653	Maximum 50 perms
Accelerated weathering 1000 hours	D4798	No cracking or checking <sup>1</sup>
<sup>1</sup> Any cracking or checking visible to the eye fails the test procedure		

**If I'm doing a re-roof is a cool roof required?** Yes as long as the following conditions exist: it's over air-conditioned space, is non-residential (hotels and relocatable public school buildings are treated specially), slope is 2:12 or less and a permit is required. (Some coastal and mountain areas are exempt.)

**Does a roof on a new building have to be a cool roof?** If the designer follows the simple prescriptive method it will require a cool roof. If the designer follows a calculated performance method there are some upgrades that could be made to the HVAC, windows, doors and walls to offset the cool roof requirement.

## **TROPICAL ASPHALT**

14435 MACAW STREET LA MIRADA, CA 90638  
714-739-1408 \* 714-670-1605 Fax

**If I'm recoating the roof does it have to be a cool roof?** Same criteria applies when coating the roof, except that since building permits aren't normally a requirement Title 24 may not apply.

**Does an Energy Star product qualify as a cool roof?** Not unless it is CRRC labeled and meets the minimum 70% reflectance and 75% Thermal Emittance.

**If I add insulation do I still need to have a cool roof?** Yes, Title 24 outlines minimum insulation values that are still a requirement of Title 24 but a cool roof would still be a requirement.

**Will I get a rebate if I install a cool roof?** Currently Southern CA Edison, PG&E, San Diego Power & Light and SMUD offer 10 cent per sq.ft. rebate. It is unlikely that the rebates will continue after the October 2005 effective date.

**Who is the CRRC?** The Cool Roof Rating Council is made up of Utilities, Government agencies, manufacturers and other interested parties. The state established the Cool Roof Rating Council (CRRC) as the sole supervisory entity responsible for administering the state's certification program for roofing products. Independent laboratories approved by CRRC conduct the testing and provide the data that the manufacturer can publish on the label.

**So as long as the product carries a CRRC it meets the California Cool Roof requirement?** Not unless it has 70% reflectance and minimum 75% emissivity and if a coating it meets the physical properties.

**What's on the CRRC label?** This data includes Initial Solar Reflectance and Initial Thermal Emittance. Weathered Values will be included after the product has been exposed for three years. Because the testing criteria were only established and adopted late 2002 Weathered values are currently listed as Pending. The manufacturer and the product also have an I.D. number on the labels. Without this label the product would not be in compliance with Title 24. If the manufacturer makes a significant change to the product, albeit an improvement, the product must be retested.

**Why would there be a CRRC label on non-compliant products?** CRRC merely rates the optical properties of a product; they do not set compliance numbers (which can vary from one region to another), nor do they test for the physical properties, which the CEC requires for coatings. For new construction, where there can be some offsetting upgrades to other building components for purposes of complying with Title 24, the actual CRRC values will be used to determine if the building meets the overall required energy efficiency. If a product does not have a CRRC label the reflectance will default to .10, which is a very dark roof.

**What is the purpose of the Cool Roof?** To reduce the peak load energy demands. This reduces the demands on power plants at peak periods of the day—usually between 1 and 3. There are additional benefits outside the scope of complying with Title 24 that include extending the service life of the roof, improved interior comfort, reduction in air pollution.

**Are gravel roofs permitted?** The short answer is No; but the long answer is gravel roofs are only permitted under a very narrow criteria and only when all of the following occur: 1. The existing roof has a rock or gravel surface, and 2. The new roof has a rock or gravel surface, and 3. There is no removal of existing layers of roof coverings of more than fifty percent of the roof or more than 2,000 square feet of roof, whichever is less; and 4. There is no recoating with a liquid applied coating, and 5. 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.

**Does aluminum qualify as a Cool Roof?** While technically possible, the criteria to allow an aluminum coating aren't practical.

**What about residential roofs?** Low-rise residential buildings using concrete or clay tile still require a thermal emittance of 0.75 but only a solar reflectance of 0.40.

**How will this be enforced?** The building departments are currently being educated on the new Title 24 requirements. When a permit is pulled, the contractor will have to submit a compliance certificate.

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