

Frequently Asked Questions About Title 24

What is Title 24?

Title 24 is the Building Standards Section in the California Code of Regulations. Title 24 has 11 parts; part 6 is the Energy Code. Title 24, part 6 now includes cool roofs. Cool roofs are the default requirement under the prescriptive method.

When was Title 24 passed?

Title 24 is the latest revision of the Warren Alquist Act passed in 1978 and is updated every three years. The most recent revision became law on October 1, 2005.

What is the goal of Title 24?

The goal of Title 24 is to reduce the energy required to operate buildings in California and avoid the rolling black-outs experienced in 2000 and 2001. Specifically, Title 24 is focused on reducing the peak energy demands typically experienced during the afternoon in the summer months when air conditioning use is the highest.

What are the new requirements?

There are many new building standards and requirements including energy efficient lighting, windows, and roofing.

When do buildings have to meet the new requirements?

Any building permit issued on or after October 1, 2005 must meet the new standards. Permits issued prior to 10/1/2005 were held to the previous 2001 standards. Buildings constructed on or after October 1, 2005 not requiring a permit will also have to comply with the updated regulations.

What buildings are required to meet the new regulations?

All mechanically heated or cooled, newly constructed, renovated, or remodeled buildings.

What are the updated Title 24 requirements for roofing?

All roofs must meet following minimum standards:

- a) Initial thermal emissivity ≥ 0.75 when tested in accordance with the Cool Roof Rating Council.
- b) Initial solar reflectivity ≥ 0.70 when tested in accordance with the Cool Roof Rating Council.

What is solar reflectivity and why is it important to the roof?

Solar reflectivity (or reflectance) is the fraction of the solar energy that is reflected by the surface (i.e., roofing membrane) back to the sky. White membranes have the highest solar reflectivity, while black have the lowest. Highly reflective roofs lower roof surface temperature.

What is emissivity and why is it important to the roof?

Infrared emissivity (or emittance) is a measure of the ability of a surface to shed some of its heat (in the form of infrared radiation) away from the surface (i.e., roofing membrane). High infrared emissivity helps keep surfaces cool. Metallic surfaces have a low infrared emissivity.

Does the new legislation affect reroofing?

Low-sloped (<2:12) non-residential roofs must meet the new requirement when half of the roof or 2,000 sq.ft. (whichever is less) is being reroofed. There is one exception for certain conditions when gravel on a built-up roof is removed down to the membrane and new gravel is added as a replacement.

What if I am located in an area where a permit is not required?

Title 24 is a regulation enforceable by law. It must be followed even in situations where a permit is not required.

Are ENERGY STAR® rated products the same as Title 24 products?

No. Title 24 requirements include both solar reflectivity (0.70) and infrared emissivity (0.75). ENERGY STAR specifies solar reflectivity (0.65) and will specify infrared emissivity (0.75) by the end of 2006.

How do I know the products I use meet the new Title 24 standards?

Title 24 requires that roofing products be certified through the Cool Roof Rating Council (CRRC) and labeled accordingly. However, the label alone does not mean the product is compliant. Look for the actual reflectivity and emissivity values listed on the label. Products must meet the minimum 0.70 reflectivity and 0.75 emissivity requirements to be compliant.

Can roof coatings be used to meet the emissivity and reflectivity standards?

Yes, look for the label with the tested values.

How will customers know if a roof meets these standards?

Every roofing product must have a product label, pallet label or bill of lading that lists the reflectivity and emissivity testing results for the product and the product must be certified by the Cool Roof Rating Council (CRRC).

Are there any exempt roofing products?

Some exemptions exist for low-rise residential and non-residential buildings that have concrete or clay tile roofs. There is one exemption for certain conditions when gravel on a built-up roof is removed down to the membrane.

What alternatives are there to installing a roof that meets these standards?

Non-mandatory design features can be substituted as long as the overall building energy budget results in the same or better energy savings than the proposed budget. Depending on what is being altered, the Overall Envelope approach under the prescriptive method or the performance approach may be used. Remember, proof of compliance is required for all methods.

Building owners, architects, or contractors may prepare building-specific designs that save equal or greater energy and include roofs that do not meet the standards.

However, they must submit the proposed designs, as well as use certified software to model the changes for Code Official Review. If the Code Official agrees that the proposed designs are more energy efficient than mandatory requirements, the building can be built following those plans.

Does the product on my roof have to be maintained to meet the reflectivity and emissivity ratings?

No. There is no requirement in Title 24 mandating that building owners maintain the initial reflectivity and emissivity ratings.

What products already meet the standard?

Some single ply products including PVC and TPO roofing membranes and BUR-type bituminous roofs that have white coatings applied to them meet the standard. It is important to note that just because a product is white, does not mean it meets the standard. It must have been tested by the CRRC, and have appropriate labeling. The label must indicate that the emissivity and reflectivity of that particular product meet the standard.

What if the roofing product I want to use does not have the CRRC designation on the packaging?

If a product is not listed with the CRRC, it is assumed that the reflectivity and emissivity of that product are 0.10.

Are Title 24 requirements the same as LEED or ENERGY STAR requirements?

No, the requirements are different.

What are my savings going to be?

Savings will vary on a number of factors, such as your building type, number of stories, windows used, insulation products used, etc. But there are calculators available that can help building owners understand potential savings. Two common calculators include the DOE (Oak Ridge National Laboratory) and EPA (Lawrence Berkeley National Laboratory).

Can I use "Green Roofs"?

Green (vegetative) roofs are currently not written into the legislation specifically. Depending on the situation, the overall envelope approach under the prescriptive method or the performance method could be used to compensate for this design.

Do current white granule cap sheets meet the requirement?

Most do not, but there are factory coated granulated cap sheets that comply.

Is there a significant difference in reflectivity and emissivity between PVC, TPO and coated roofs?

Reflectivity and emissivity are surface properties, unrelated to what is underneath.

Is there a significant difference in like product categories between manufacturers?

The CRRC posts all manufacturers test results on their web site. Generally speaking, white membranes or surfaces have results that meet the Title 24 requirement.

Does the emissivity vary a great deal between coated BUR, coated SBS, and coated APP?

Reflectivity and emissivity are surface properties, unrelated to what is underneath.

Do thermoplastics retain their reflectivity and emissivity qualities longer than the coating?

It depends on the durability of the thermoplastics and of the coating.



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