

# COOL ROOF REQUIREMENTS FOR LOW-RISE RESIDENTIAL BUILDINGS

## FOR CLIMATE ZONE 10

The new 2013 Building Energy Efficiency Standards effective July 1, 2014 requires cool roof when using the prescriptive package A in new residential construction, addition or alteration. Roofing products with high solar reflectance and thermal emittance are referred to as “cool roof”. **Solar Reflectance** refers to a material’s ability to reflect the sun’s solar energy back into the atmosphere. **Thermal emittance** provides a means of quantifying how much of the absorbed heat is rejected for a given material. Both properties are measured from 0 to 1 and the higher the value, the “cooler” the roof. Cool roofs are a prescriptive requirement for steep-sloped roof application on residential buildings for climate zone 10. There are numerous materials in a wide range of colors to meet cool roof requirements such as tile, metal, asphalt, and coating material that may meet cool roof requirements. To be considered a cool roof the roofing products must be tested and labeled by the Cool Roof Rating Council (CRRC). If one wishes not to install a cool roof then they must meet the 2013 Energy Standards using the performance method where tradeoffs can be done.

The residential roofing products requirement for the prescriptive package A for City of Ontario climate zone 10 is:

1. For low-sloped roof ( $\leq 2:12$  slope): Cool roof not required
2. For steep-sloped roof ( $> 2:12$  slope):
  - Minimum 3-year aged solar reflectance = 0.20, and
  - Minimum thermal emittance = 0.75
  - OR
  - Minimum solar reflectance index (SRI) = 16

### *Exceptions:*

- a) The roof area with building integrated photovoltaic panels and building integrated solar thermal panels are exempt.
- b) Roof constructions that have thermal mass over the roof membrane with a weight of at least 25 lb/ft<sup>2</sup> are exempt.

Replacements of existing roofing (reroofing) shall comply with above cool roof requirements where more than 50% of the roof is being replaced.

### *Alternatives:*

- a) Air-space of 1.0 inch (25 mm) is provided between the top of the roof deck to the bottom of the roofing product; or
- b) The installed 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; or
- c) Existing ducts in the attic are insulated and sealed according to Section 150.1(c)9; or
- d) Buildings with at least R-38 ceiling insulation; or
- e) Buildings with a radiant barrier in the attic meeting the requirements of Section 150.1(c)2; or
- f) Buildings that have no ducts in the attic; or
- g) In Climate Zones 10, R-4 or greater insulation above the roof deck.