COOL ROOF REQUIREMENTS FOR LOW-RISE RESIDENTIAL BUILDINGS

The new 2008 Building Energy Efficiency Standards effective January 1, 2010 requires cool roof when using the prescriptive package in new residential construction, addition or alteration. Roofing products with high solar reflectance and thermal emittance are referred to as "cool roof". Cool roofs are now a prescriptive requirement for steep-sloped roof application on residential buildings for climate zone 10. There is no requirement for low-sloped roof for climate zone 10. A low-sloped roof is defined as a roof with slope of 2:12 or less. A steep-sloped roof is defined as a roof with slope greater than 2:12. 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 2008 Energy Standards using the performance method where tradeoffs can be done.

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

1. For steep-sloped roof with roofing products with a density of <u>less than 5 lb/ft^2</u> (e.g. asphalt shingle and metal products):
    - Minimum 3-year aged solar reflectance = 0.20, and
    - Minimum thermal emittance = 0.75
      OR
    - Minimum solar reflectance index (SRI) = 16

2. For steep-sloped roof with roofing products with a density of <u>5 lbs/ft^2 or more</u> (e.g. concrete tiles, clay tiles, slate, or possibly some synthetic roof coverings):
    - Minimum 3-year aged solar reflectance = 0.15, and
    - Minimum thermal emittance = 0.75
      OR
    - Minimum solar reflectance index (SRI) = 10

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^2 are exempt.

Replacements of existing roofing (reroofing) shall comply with above cool roof requirements where more than 50% of the roof or more than 1,000 sqft of roof, whichever is less, is being replaced.

Alternatives:

a) Insulation with a thermal resistance of at least 0.85 hr.ft^2.^{o}F/Btu or at least a ¾" air space is added to the roof deck over an attic; or
b) Existing ducts in the attic are insulated and sealed; or
c) With 1 ft^2 of free ventilation area of attic ventilation for every 150 ft^2 of attic floor area, and where at least 30% of the free ventilation area is within 2 feet vertical distance of the roof ridge; or
d) Buildings with at least R-30 ceiling insulation; or
e) Buildings with a radiant barrier in the attic; or
f) Buildings that have no ducts in the attic; or
g) R-3 or greater roof deck insulation above vented attic.