COOL ROOF REQUIREMENTS FOR NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, HOTEL/MOTEL BUILDINGS FOR CLIMATE ZONE 10

The new 2016 Building Energy Efficiency Standards effective Jan 1, 2017 requires cool roof when using the prescriptive approach in nonresidential, high-rise residential, hotel/motel new construction, addition or alteration. Roofing products with high solar reflectance and thermal emittance are referred to as "cool roof". 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 2016 Energy Standards using the performance method. Where more than 50% of the roof or more than 2,000 sqft of roof, whichever is less, is being replaced, recovered or recoated, this altered roof area shall meet the cool roof requirements. Any roof area covered by building integrated photovoltaic panels and solar thermal panels are exempt from cool roof requirements.

The roofing products requirement for the prescriptive approach for City of Ontario climate zone 10 is:

A. NONRESIDENTIAL BUILDINGS:

1. For **low-sloped** roofs (≤ 2:12 slope):
   - Minimum 3-year aged solar reflectance = 0.63 AND minimum thermal emittance = 0.75, **or**
   - Minimum solar reflectance index (SRI) = 75

   Exceptions:
   - Roof constructions that have thermal mass with a weight of at least 25 lb/ft^2 over the roof membrane are exempt.
   - An aged solar reflectance < 0.63 is allowed provided the maximum roof/ceiling U-factor in Table 141.0-B of Standards is not exceeded.
2. For **steep-sloped** roofs (> 2:12 slope):
   - Minimum 3-year aged solar reflectance = 0.20 AND minimum thermal emittance = 0.75, **or**
   - Minimum solar reflectance index (SRI) = 16

B. HIGH-RISE RESIDENTIAL AND HOTEL/MOTEL BUILDINGS:

1. For **low-sloped** roofs (≤ 2:12 slope):
   - Minimum 3-year aged solar reflectance = 0.55 AND minimum thermal emittance = 0.75, **or**
   - Minimum solar reflectance index (SRI) = 64

   Exceptions:
   - Roof constructions that have thermal mass with a weight of at least 25 lb/ft^2 over the roof membrane are exempt.
2. For **steep-sloped** roofs (> 2:12 slope):
   - Minimum 3-year aged solar reflectance = 0.20 AND minimum thermal emittance = 0.75, **or**
   - Minimum solar reflectance index (SRI) = 16

For NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, AND HOTEL/MOTEL BUILDINGS when roofs are exposed to the roof deck or to the recover boards, the exposed area shall be insulated with a continuous insulation of R14 with a U-factor of 0.055.

Exceptions:

1. The existing roof is insulated with at least R-7 insulation or it has a U-factor lower than 0.089.
2. If existing mechanical 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 from the roof membrane surface to the top of the base flashing.
3. If adding the insulation will reduce the base flashing height to less than 8 inches at penthouse or parapet walls, the insulation added may be limited to the maximum insulation thickness that will allow a height of 8 inches from the roof membrane surface to the top of base flashing, provided that the all the following conditions apply:
   a. The penthouse or parapet walls are finished with an exterior cladding material other than the roofing covering membrane material; and
   b. The penthouse of 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; and
   c. For nonresidential, high-rise residential and hotel/motel buildings, the ratio of the replaced roof area to the linear dimension of affected penthouse or parapet walls shall be less than 25 sqft.
4. Tapered insulation may be used which has a thermal resistance less than the prescribe level 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 exceed the value that is specified above.