

Too much moisture in the roof

A recently renovated home had a problem with mould in the roof cavity. BRANZ found moisture from a poorly ventilated bathroom was passing through downlights into an airtight roof space. It's a lesson for others.

EXCESS MOISTURE can be a problem in roof spaces causing building material degradation, corrosion and mould growth. Moisture can accumulate in the roof space:

- from the outside - which is the least likely
- in the form of construction moisture that remains in materials after close-in - usually in the first 2 years
- from the living areas and bathrooms.

When the ceiling is not airtight

Moisture from the living area can easily migrate to the roof space if the ceiling is not airtight. If the roof space is cold enough, this moisture can then condense.

As part of a Building Research Levy-funded project, BRANZ was called by a builder to look at the roof space of an Auckland home where mould growth was evident. As the 1980s house was renovated 3 years ago, construction moisture shouldn't be a problem any more.

BRANZ has a methodology to measure roof and ceiling airtightness using two large blower-door fans. The measurements allow us to find out the expected air exchange



Mould growth in the Auckland home's roof.

between the roof and outdoors and between the roof and indoors via the ceiling. For more details on how this method works, watch out for BRANZ Study Report SR401 *Airtightness of roof cavities* (available later in the year).

Roof airtight – no escape for moisture

The airtightness measurement revealed that this gable roof space was on the airtight side

and would not allow enough air exchange for the moisture load it was exposed to.

The method allows us to calculate an effective leakage area - essentially the size of all openings in the roof envelope.

The ratio of this leakage area to the total ceiling area of the building is often used to characterise the sizing of roof ventilation. Some countries prescribe ventilation ratios, ➤