

## **Designing building facades to manage the risk of interstitial condensation**

This Technical Note is one of six on the thermal performance of building envelopes. The series comprises:

- 106: Fundamentals of heat transfer,
- 107: Thermal transmittance (U-values) for built-up walls,
- 108: Thermal bridges, Psi and Chi values,
- 109: Thermal bridges within SAP and NCM,
- 110: Designing building facades to manage the risk of surface condensation and mould growth,
- 111: Designing building facades to manage the risk of interstitial condensation.

### **Introduction**

- 1 This Technical Note provides updated guidance to specifiers and designers for the specification of suitable levels of performance to manage the risk of condensation within the layers and materials making up the façade.
- 2 The guidance in this Note has been written with new construction in mind. However, much of this guidance is applicable to refurbishments, particularly the calculation of the internal environment. Designers would need to consider which elements of this guidance are directly applicable, applicable with some modification and which elements are not applicable for each refurbishment project.
- 3 The performance requirements for limiting the risk of condensation and mould growth have become more onerous to reflect ever-tightening requirements for limiting air leakage through building envelopes and the consequential loss of unintended background ventilation that resulted.
- 4 Building designers should be aware that the avoidance of condensation and mould growth extends beyond the design of the building envelope, and also requires that the design team make adequate provision for ventilation, and that the building occupier both uses the available ventilation in an appropriate manner and takes steps to limit the generation of airborne moisture. It is not possible to specify any standard of performance that will guarantee freedom from condensation and mould if there is inadequate ventilation and poor moisture management procedures.
- 5 In many constructions there will be a need for co-ordination of the design of interfaces between two different envelope work packages, in order to avoid thermal bridges which might otherwise adversely affect the hygrothermal performance of one or both elements of the works either side of the interface. The designers of the envelope systems either side of any interface between their works are equally responsible for checking the agreed design of the interface to ensure that it does not compromise the performance of their element of the works or the overall performance. Even though all parties with designs relating to the interface bear some design responsibility for ensuring the overall system performs adequately it may be beneficial to assign responsibility for these interfaces from the outset.