

## External shading devices

*The use of external shading devices is becoming more widespread in the UK in response to comfort requirements and energy saving requirements set out by the Building Regulations. They may be used to improve the performance of the building or simply to create a certain aesthetic. This Technical Note looks at the practical issues associated with external shading.*

*This Technical Note should be read in conjunction with:*

*TN 50 Solar gain and shading  
TN 51 Environmental control glasses*

### Introduction

External shading devices are the most effective way of controlling solar gain in buildings with highly glazed facades. Compared with internal devices they may significantly reduce the internal solar gains within the building. Internal shading devices may however still be required for the control of glare.

The easiest way to control solar gain is through suitable use of glass (in terms of glazed areas and orientation, and glass type). This will not be appropriate for all buildings however so additional measures may have to be taken, particularly when considering highly glazed facades.

Many different shading devices may be used depending on the performance required or the architectural intent. External devices include:

- Horizontal projections
- Vertical fins
- In-plane devices (e.g. louvres with horizontal slats)
- Roof overhangs
- Window reveals

Additionally cavity, or mid-pane blinds may be employed, particular where double skin facades are used.

Many different materials may be used for the shading device depending on the performance and appearance required. Typical materials used include;

- Metals (solid and perforated)
- Timber
- Glass (coated/tinted, fritted, sand blasted, photovoltaics)

An alternative to using external shading is to use a solar control glass. Solar control glasses have the advantage that they are spectrally selective, allowing a higher percentage of visible light transmission compared to shortwave infrared; however in a highly glazed façade they are unlikely to be able to provide adequate shading alone. These are discussed in more detail in TN51.

This Technical Note has been written considering best practice for intermediate latitudes (between the arctic and the tropics) in the Northern hemisphere. Similar principles are applicable in the Southern hemisphere, however it should be remembered that the sun will be due north at 12pm as opposed to due south in the Northern hemisphere.

### Building Regulations

Measures to control solar gains in buildings have been in place since 2002 for non-domestic and 2006 for domestic buildings, in order to reduce energy use for cooling. The Building Regulations Approved Documents (AD) were tightened further in the 2010 revision.

To meet **AD L1A** (new dwellings) there is a procedure given in SAP 2009 Appendix P. The method assesses the risk of high internal temperatures based on a calculation involving ventilation losses, fabric losses and internal gains.

**AD L2A** (new building other than dwellings) states:

‘reasonable provision for limiting solar gain through the building fabric would be demonstrated by showing that, for each space in the building that is either occupied