

Glass in buildings

CWCT publishes practical guidance on facades in the form of Technical Notes. Four existing Technical Notes relating to the use of glass have been revised and the series is being expanded to eight. There are now four Technical Notes covering the general issues relating to different types of glass, glazing units, glass breakage modes and thermal fracture of glass. The remaining four deal with different aspects of the selection of glass for safety and are described in more detail below.

CWCT's TN68 considers the risks associated with overhead glazing. The scope of the guidance includes the use of both vertical and sloping glazing where there is a risk of glass falling on people. The approach taken to the selection of appropriate glass configurations is one of risk assessment based on the probabilities of:

- glass breaking;
- glass falling when broken; and
- glass falling on people.

TN68 describes the risks associated with different types of glazing in roofs, facades and canopies. It discusses methods of risk analysis and of assessing post-failure behaviour, and gives guidance on the selection of appropriate glazing.

Traditionally, sloping glazing has been defined as any glass within 75 degrees of the horizontal. The new guidance recognises that any glass that is not nominally vertical is more prone to falling from place than vertical glass. Although there is less probability of glass falling from a vertical façade, there may be many more panes of glass that could fall in the same place. The guidance also recognises that post-failure behaviour depends on the method of glass retention and glass may be more likely to fall when modern fixing methods are used rather than with traditional rebates.

Another aspect when specifying roof glazing is the risks associated with working above and around the glazing. Guidance on specification for safety and fragility of glazed roofing is given in CWCT TN66. The safety issues concern the safety of people below the roof, who may be affected if the glass fails and falls, and if objects fall through the roof. They also affect people who may be on the roof who may be injured by contact with the glass or by falling through it.

TN66 provides guidance on glass selection, and defines four classes of performance:

- Class 0 are roofs designed for unrestricted access;
- Class 1 are roofs that are walked on for occasional cleaning and maintenance activities;
- Class 2 are roofs that are not intended to be walked on but on to which people may fall whilst working on an adjacent roof or on access equipment; and
- Class 3 are fragile roofs requiring appropriate barriers and signage.

Methods of testing and assessment are given in a separate Technical Note TN67.

Finally, guidance will soon be published on the selection of glass to prevent falls from height. In buildings, barriers are required at



Nickel sulfide failure of toughened glass (courtesy of Sandberg)

changes of level to prevent people from falling. Barriers may be in the form of balustrades or full height walls and in both cases glass is commonly used as an infill material. Glass may also be used as the primary structural material both in glass walls and balustrades.

Barriers are required to be designed to resist static loads but, where glass is used, it is also necessary to consider impact loads. The new guidance will consider the effect of the adoption of the new Eurocode for loading and give advice on the selection of glass for use in facades and freestanding barriers.

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