

## **SAFETY AND FRAGILITY OF GLAZED ROOFING: guidance on specification**

*This Technical Note provides guidance on safety issues relating to access to glass roofs and maintenance of glass roofs. It describes a procedure that the specifier of a building may adopt to determine whether a glass roof is required to be non fragile and the performance requirements for a non fragile roof. These requirements must then be set out in the specification so that the designer of the roof can ensure that it provides the appropriate performance. A test procedure to assess the performance of the roof is described in Technical Note 67.*

*This Technical Note is one of eight describing the performance of glass. They are:*

- TN61 Glass types*
- TN62 Specification of insulating glass units*
- TN63 Glass breakage*
- TN65 Thermal fracture of glass*
- TN66 Safety and fragility of glazed roofing: guidance on specification*
- TN67 Safety and fragility of glazed roofing: testing and assessment*
- TN68 Overhead glazing*
- TN69 Selection of glass to prevent falls from height*

### **Introduction**

This Technical Note is aimed specifically at glazed roofs which are not accessible by the public but where people carrying out maintenance to the roof, or to other equipment mounted on the roof, may walk, fall or drop objects onto the glazed part of the roof.

The safety issues concern the safety of people below the roof and people who may be on the roof. People below the roof may be affected if the glass breaks and falls or if objects fall through the glass. People on the roof may fall onto the glass and be injured by contact with the glass or by falling through the glass. The more general safety issues relating to the use of glass overhead are covered in Technical Note 68.

A fragile surface is defined in the Work at Height Regulations as:

*'A surface or assembly which would be liable to fail if any reasonably foreseeable loading were to be applied to it.'*

For lightweight roof construction the impact of a person falling on the roof or dropping tools on the roof may be reasonably foreseeable and may be more critical than the nominal static load given in BS6399.

Glass roofing has traditionally been considered to be fragile however in recent years there has been a move to using non fragile forms of roof construction hence the fragility of glass roofing has had to be considered.

The construction of a safe roof will require:

- Sufficient strength to support all anticipated loads.
- Safe post-failure behaviour in the event of breakage.
- Sufficient rigidity to prevent deformation under load, which may cause concern to those either on or within sight of the glass.
- If the glass is to be walked on sufficient slip resistance to prevent people slipping and injuring themselves.

Glazed roofs can always be designed to withstand any specified loading or impact, typically by using glass which has higher strength, and by designing the frame and supports to carry the load. There may however, be considerable cost implications and other constraints. These include limitations from the manufacturing and fabrication processes and the ease with which heavy glass panes can be safely handled during transportation and construction.