

SAFETY AND FRAGILITY OF GLAZED ROOFING - guidance on specification and testing

This Technical Note provides guidance on some of the safety issues, which need to be taken into account in the design of glazed roofing and in the completion of risk assessments involving glazed roofing. A test for assessing the fragility of glazed roofing is also included and the test method justified. This method ensures that the whole assembly, consisting of the glass, supporting structure, manner of fixing, glazing materials and all other components is tested rather than just the glass component.

Introduction

A designer must consider many issues when specifying glass for use in glazed roofs. These issues may increase design complexity and costs considerably. Such issues may require:

- Sufficient strength to support all anticipated loads.
- Safe post-failure behaviour in the event of breakage both for people on and beneath the roof.
- Sufficient rigidity to prevent deformation under load, which may cause concern to those either on or within sight of the glass.
- Sufficient slip resistance to prevent people slipping and injuring themselves when walking on glass.

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 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.

This Technical Note is aimed specifically at glazed roofs not accessible by the public but where it is possible for persons working on or in the immediate vicinity to fall and/or drop objects onto the glazed roof during cleaning/maintenance activities. In these circumstances there may be several potential hazards such as contact with broken glass, the person falling through the roof and objects including broken glass falling onto people below.

In this Technical Note the term 'glazed roof' will refer to both fully glazed roofs and to glazed parts of roofs, ie rooflights. It is intended to cover a significant number of the safety concerns with glazed roofs. It does not endeavour to cover all possible concerns due to the complexity of the issues involved.

This Technical Note is not applicable to roofs that are accessible by the public which should be designed in a similar manner to glass floors and other walk-on glass surfaces, including withstanding the appropriate design loads from BS 6399-1. Many of the issues discussed will however be relevant.

Roof types

In this Technical Note glazed roofs are classified into three types. These are:

Type 1

Roofs which may be walked on for occasional cleaning/maintenance activities and which will therefore need to support both the weight of people on the glass and their equipment. Such roofs could be subject to impact from a person, and/or any object carried, falling onto its surface.

Type 2

Roofs where people are restricted from walking on the glass, but may walk adjacent to the glazing. Such roofs could be subject to impact from people tripping and falling onto its surface. Objects being carried may also fall onto its surface.

Type 3

Roofs where people are restricted from walking on or falling on to the glass, by a