

## Technical Note No 43 FILM BACKED GLASS

*This Technical Note gives advice on films that are applied to glass to improve performance and recommends that a risk assessment should be carried out prior to installation to establish how risks have changed and to inform all parties of any changes in hazards and risks.*

### Introduction

In some instances the performance of glass panes may be improved prior to installation or more commonly after installation. One of the simplest, least disruptive and cost-effective solutions is to add a plastic film to one or both sides of the glass. The films can improve safety, security, solar control and visual appearance, while providing privacy, resistance to graffiti, UV protection and glass manifestation. Some films can fulfil more than one purpose. A major advantage of using film is that the need to purchase and install new glazing can be avoided.

### Films

The films have a thickness of less than 1 mm and are generally available up to 1500 mm in width. Professional installation is required to achieve desired performance, but films are often easy to apply, easy to remove and can in some cases be reused. They have the potential to be attached in any climate and to any glazing product, whether they be single glazing or insulating glass units.

Films range from completely transparent that cannot be detected by the human eye to nearly opaque, which can be used to reduce fading and provide privacy. Films are also available in a variety of colours or tints (e.g. blue, bronze, gold, green, grey), patterns and logos for decoration and to provide manifestation so that the glass can be seen easily.

Reflective and tinted films are used to enhance the appearance, ambience and energy efficiency of buildings. They will in general result in less light being transmitted and an increase in the absorption of solar radiation by the glazing. Newly developed tinted films can have only a very light tint and good solar energy rejection, which will reduce the absorption of solar radiation by the glazing.

Films are normally applied to the inside of the glazing, although they may in some circumstances be applied to the outside surface or to both surfaces of the glazing, where required for performance.

In general, the addition of films to glass is a remedial action to improve glazing performance or meet demands of legislation. There can however be instances when they are added to new buildings for the same reasons and/or for decoration.

The use of films can help non-safety glass in pre-existing buildings comply with safety glass regulations. They can also improve the thermal comfort of pre-existing building.

BS 6262 mentions film backed annealed glass, but does not provide significant guidance.

### Film types

Most films are produced from multiple polyester sheets bonded together with adhesive. They will often have a powerful self-adhesive on one side of the film that sticks to the glass. Polyester film is used due to its toughness and high optical clarity. Other layers such as metallised film, alloys, dyes and various oxides for solar control may also be present. UV protection is provided by ultraviolet absorbers within the film body and/or adhesive layer. A scratch resistant coating may be applied onto the exterior surface to improve resistance to abrasion and cleaning. The films have a number of uses, which include:

- Anti-graffiti
- Decoration/manifestation
- Environmental control
- Safety/security