

GGF Datasheet: Recommendations for Adhesive Backed Polymeric Film Applied to Glass - Visual Quality

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Introduction

This GGF Datasheet defines the visual quality standard for adhesive backed polymeric film applied to glass

1. Scope

This Datasheet detail the acceptable visual quality for adhesive backed polymeric film applied to architectural glass.

Adhesive backed polymeric filmed glass is not expected to have identical visual quality as the glass on which it is installed.

2. Definitions and Description

See GGF Datasheet 5.18.1 Recommendations for Adhesive Backed Polymeric Film Applied to Glass: Definitions, Descriptions and Components.

3. Cure Time

Installed film has a discrete time for full adhesion to be

effected since installation utilises a detergent solution in water to float the film onto the glass; the excess water is squeegeed out but inevitably residual water will remain between the film and glass. The time to achieve full adhesion is often referred to as “the adhesive cure time”. Adhesion will be increasing from a lower value during this time. Visual and adhesive cure time is related to thickness and type of film used. Typical visual cure times may be extended or shortened according to local environmental conditions.

4. Inspection for Visual Quality

Inspection for optical quality can be made before full visual cure is attained. Table 1 provides a guide for typical visual cure times for adhesive backed polymeric film not containing layers of metal, alloys, oxides and similar coatings. It should be noted that effects during cure, such as water bubbles, water distortion, and water haze are not to be regarded as defects.

5. Inspection Conditions

5.1 Internally applied film

The glass with applied film shall be viewed by looking through the film at right angles to the glass from the room side, at a distance of not less than 2 metres. Viewing shall be carried out in natural daylight, not in direct sunlight, and shall assess the normal vision area with the exception of a 50mm wide band around the perimeter of the unit.

5.2 Externally applied film

The glass with applied film shall be viewed by looking through the film at right angles to the glass from either side as appropriate at a distance of not less than 2 metres. Viewing shall be carried out in natural daylight, not in direct sunlight, and shall assess the normal vision area with the exception of a 50mm wide band around the perimeter of the unit.



6. Acceptance Criteria

6.1 Internally applied film

The installation shall be deemed acceptable if any of the following are not visually disturbing (effects during visual cure should be disregarded): -

Dirt Particles	Water Haze
Hair and Fibres	Scores and Scratches
Adhesive Gels	Film Distortion
Fingerprints	Insects
Creases	Air Bubbles
Edge lift	Nicks and Tears

Initial inspection may be under taken within 1 day of installation. Visual quality shall be judged by looking through the film installation under the conditions described in Section 5.

6.2 Externally applied film

The installation shall be deemed acceptable if any of the following are not visually disturbing (effects during visual cure should be disregarded): -

Dirt Particles	Water Haze
Hair and Fibres	Scores and Scratches
Adhesive Gels	Film Distortion
Fingerprints	Insects
Creases	Air Bubbles
Edge Lift	Nicks and Tears

Initial inspection may be under taken within 1 day of installation. Visual quality shall be judged by looking through the film installation under the conditions described in Section 5

Due to the conditions existing in external installations the visual quality of applied film may not be as good as for internally applied film. However, the installation quality should not reduce the performance and/or the expected life of the applied film.

7. Inspection of Perimeter Zone

7.1 Internally applied film

The 50mm wide band around the perimeter shall be assessed by a similar procedure to that in 4 and 5, but a small number of particles are considered acceptable where poor frame condition mitigates against the high quality standards normally achieved.

7.2 Externally applied film

The 50mm wide band around the perimeter shall be assessed by a similar procedure to that in 4 and 5, but allowing for a small increase in defects since external environmental conditions usually mitigates against the high quality standards normally achieved.

8. Edge Gaps

Edge gaps will normally be 1 - 4mm without allowing the film to contact the frame/glazing margin, gaskets, or similar, but may need to be greater where frame/glazing conditions do not allow close fitting of the applied film. This edge gap allows for the water used in the installation to be squeezed out and ensures that film edges are not raised up by contact with the frame margin. Contact with the frame margin could lead to peeling of the film, and is an installation fault. For thicker films of > 200µ the edge gaps will normally be < 4mm, depending upon frame/glazing conditions.

An edge gap of < 2mm is recommended for darker (tinted, metallised, tinted/metallised, and sputtered) films to minimise the light line around the edge of the installed film.

9. Splicing of Film

Splicing of film is necessary when larger panels of glass are treated, where both length and width of the glazing panel exceed the maximum width of film. The splice line itself should not be viewed as a defect. This line should be straight and should be parallel to one edge of the frame margin. The two pieces of film may be butt jointed, and should be close but not touching; the maximum gap at any point in the splice line should be 1mm. Film of less than 50µ may be overlapped, spliced or butt jointed.

NOTE: In some cases a butt joint (e.g. safety/security film) is necessary on glazing panels that are subject to bow. In these cases the gap along the splice may have to be greater than 1mm.

10. Visible Light Reflections

It should be noted that visible light reflections can be changed by installation of window film. This is especially the case for films with deposited layers containing metal, metal alloys, or similar. This is not a defect, but is a natural consequence of the high performance coatings used within the film.

11. Marking of Safety Film

Safety films used to comply with **BS 6262-4: Glazing for buildings: Part 4: Code of practice for safety related to human impact**, shall be correctly marked to show compliance with the relevant British Standard (EN 12600).

The marking shall be as follows:

- (a) an identifiable name, or trademark, or other mark capable of identification
- (b) the type of material, i.e. "F" for film applied glass
- (c) the number of the British Standard, EN 12600
- (d) the classification according to EN 12600

This mark shall be permanent, and applied during installation in a position so that it will remain completely visible and readable after installation. Examples of permanent marking include non-reusable labels (e.g. perforated or brittle labels that peel from the substrate in small pieces) and UV stabilised ink printing.

NOTE: Typical cure times are for the installed product to reach acceptable visual quality and are not to be confused with time to performance. Cure times will be extended for certain environmental conditions, e.g. low temperature and/or high humidity and/or external blinds drawn down to shade the film from direct sunlight.

Film Thickness / μ	Typical cure times / days
Up to 100	30
100 to 200	60
200 to 300	100
300 to 425	140

Table 1: Typical cure times for film (Section 3)

13. References

13.1 Standards

British Standards

BS 6262-4: Glazing for buildings: *Code of practice for safety related to human impact*

European Standards

EN 12600: Glass in building: *Pendulum test.- Impact test method and classification for flat glass*

13.2 GGF Datasheets

For information on all of the 5.18 series see Datasheet 5.18.

