

Pilkington **Planar**™ System Information

Pilkington Screen Printed Glass



AMC THEATRE, California, USA. (Non-standard screen printed design)

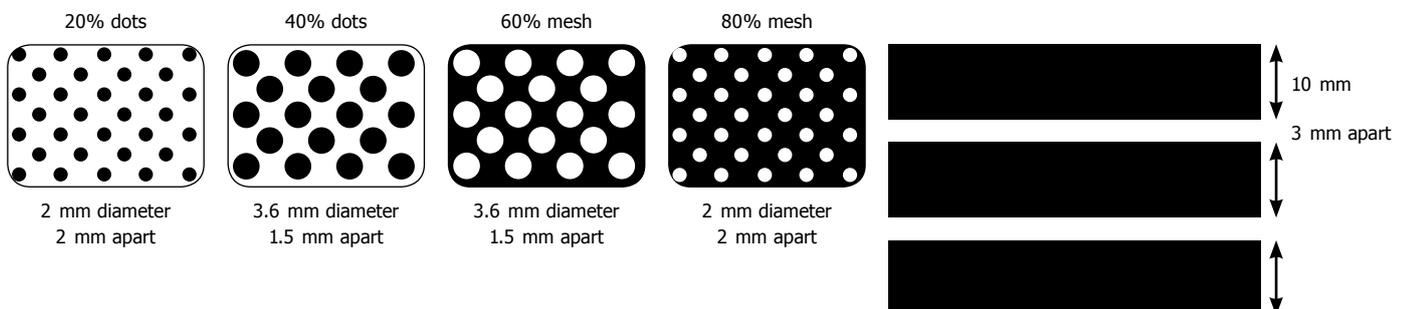
Introduction

Screen printed glass is one of the decorative products from within the Pilkington Decorative Glass range. It is ideal for use in partitions, roof glazing and external walls where a combination of aesthetic and functional needs are required.

The major benefits are:

- Control of solar heat and light transmission
- Privacy
- Flexibility of designs – standard or commissioned
- Available in Pilkington **Planar**™ single, double or triple glazed and laminated options
- Available in a range of colours
- No colour fading

Standard Designs



Flat glass size

Maximum	2400 x 4800 mm
Maximum print coverage	2400 x 4500 mm
Minimum size	360 x 500 mm

Designs

Pilkington Architectural offer a range of standard designs as listed below. However, the inherent nature of the product encourages the use of bespoke designs. All bespoke designs should be submitted for discussion prior to placing an order to ensure that all design, colour and cost implications have been fully considered.

A non-standard design can be provided if:

- Minimum distance apart and width of lines is 3 mm
- Minimum diameter of dot or hole is 2 mm
- Minimum distance between dots or holes is 1.5 mm

Colours

WHITE ceramic ink is the most commonly used colour, though there are two other standard colours available:

BLACK and DIFFUSED (simulated Acid Etch).

For non-standard colour availability, please contact Pilkington Architectural.

The standard range is limited to one colour per glass. Although digital ink printing now provides the option for multi coloured designs and images for a reduced range of sites.

Screens

In order to maintain a consistent appearance, each glass size requires its own screen. Because of this, a minimum order level of 20 panes per size is normally required. However, smaller quantities can be ordered at increased costs. The screens must be paid for by the clients as part of the contract and after completion of the contract screens will be kept for a period of six months and then offered to the client before disposal, thus it may be beneficial to order spare panes.

Performance

The use of screen printed glass gives both aesthetic and technical control of heat and light transmission. By increasing the ceramic coverage on the glass, the shading coefficient of clear and body tinted glasses is reduced, thus allowing greater flexibility of choice and design.

Performance data for screen printed glass is available on request.

Silk Screen Printed Glass Quality Specification

Flat glass

Thicknesses:	10, 12 mm	±0.3 mm
	15 mm	±0.5 mm
	19 mm	±1.0 mm
Print Pattern Position:	±3 mm	

Flat glass size – rectangles – traditional screen method

Maximum:	2400 x 4800 mm	±1 mm
Minimum:	360 x 500 mm	±1 mm
Aspect ratio:	14:1	Maximum
Diagonal tolerance:	Up to 4 m:	3 mm Maximum difference
	Over 4 m:	4 mm Maximum difference

Flat glass size – rectangles – digital method

Maximum:	2400 x 4800 mm	±1 mm
Minimum:	360 x 500 mm	±1 mm
Aspect ratio:	14:1	Maximum
Diagonal tolerance:	3 mm max difference	
Typical resolution:	360 dpi (dependant on project parameters and original artwork quality)	

Flat shape capability – simple shapes

All tolerances will vary depending on the complexity of shape.

Bow

Maximum bow:	0.2%	(Ceramic coated glass)
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Roller wave

Mean roller wave:	t = 6 mm	0.05 mm
Mean roller wave:	t > 6 mm	0.02 mm
Mean roller wave, digital process:		0.05 mm
Maximum edge dip:		0.25 mm
Roller wave is usually parallel to the short side and in coated glass should be glazed horizontal where possible.		

Edge condition

Smooth ground edges giving a flat profile with small ground arris. Shells or chips at edges will be ground out prior to toughening and do not constitute reason for rejection. Corners may be dubbed. Some variation in edgework may be discernible on exposed edges where different machines and/or hand forming is a requirement for manufacture. Such variations shall be kept to a minimum.

Hole drilling – rectangles

Diameter:	19 mm ±1 mm (countersunk)
Position:	Normally 60 mm from glass edge at corners and sometimes along edge. Other configurations subject to confirmation.
Tolerance:	±2 mm from one datum point.
Number:	Up to 10

Toughening stress

Thermally toughened soda lime silicate safety glass to BS EN 12150. Classified as 1 (C) 1 to BS EN 12600. Checked regularly during production by fracture count or the Differential Stress Refractometer (DSR) method.

Heat soak testing

All toughened glass will be supplied heat soaked to or in excess of international specifications (e.g. BS EN 14179).

Visual quality

Roller wave and natural bow in toughened glass have minimal effect on vision in transmission but can be observed in reflection, obviously more with reflective glass. This is kept to a minimum with the very low roller wave and bow in Pilkington Toughened and Heat Soaked Glass. Site inspection should be from a distance of 3 m and viewed at right angles to the glass.

Installation

Whilst the Pilkington **Planar**™ system is completely weatherproof, the components are not designed to be left in contact with water for extended periods, and adequate ventilation or drainage should be provided to allow the system to dry out periodically. Weatherseals used around the periphery must be compatible with the Pilkington **Planar**™ system and approval from Pilkington Architectural should be sought prior to application.

Printing

Screen printed glass is produced to a high standard, although the inherent nature of the products and processes are such that they may give minor imperfections such as pin holes, small print misses, small variations, etc. In order to establish an acceptable visual standard the glass should be inspected from a distance of 3 m, and at right angles to the glass.

Colour variation

The colour of the print will be modified by the glass tint (when viewed from glass side). Different glass thicknesses will modify the same print by different amounts (when viewed from glass side). Slight colour variations can occur from variations in ink batches and tempering conditions.

Opacity

With lighter colours, dark objects in close/intimate contact with printed surface may 'show through,' i.e. adhesives/insulation, etc. 'All over' solid colours are generally not suitable for use in transmitted light situations where pin holes, linear marks from the directional nature of the process will be visible. 'All over' simulated acid etch is a more 'translucent' finish, which tends to reduce the effects of pin holes, print misses and linear marks from the process, although they may still be visible. Patterns either all over or partial tend to reduce the effects of pin holes, print misses and linear marks from the process, although they may still be visible.

Pattern

During the elevated temperatures of the tempering process, the medium in which the glass powder and colourants are suspended is 'driven off.' Some slight shrinkage may occur at the edge of the pattern, which may result in some minor loss of definition. With screen print dimensions greater than 1200 mm wide, a joint may be necessary in the screen. This may be apparent on the finished product. A clear border of 12 mm is recommended around the edge of each printed panel. Pin holes, small print misses and spot faults may be present in the product, the application will determine to a considerable extent whether the features are more or less obtrusive: fine scratches and scars barely perceptible from 3 m shall be deemed acceptable, white handling scars, shall be deemed rejectable.

Simulated Acid Etch Finish

The acid etch finish exhibits, what can best be described as, a porous surface and contamination can be difficult to remove. It is recommended that appropriate preventative action is taken, particularly on construction sites.

This publication provides only a general description of the products. Further, more detailed information may be obtained from your local supplier of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, code of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any error in or omission from this publication and for all consequences of relying on it.



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