

# General Information

## GLOSSARY OF TERMS

### ANNEALED GLASS

The stresses created by the manufacturing process are removed during the annealing process. Annealed glass refers to the glass at the end of manufacture ensuring high quality and easy cutting.

### COATED GLASS

Thin layers of material are applied to the surface of the glass to add properties to the glass including reduced light transmission, increased solar energy elimination, colour and aesthetic properties. Examples of coated glass include mirrors, spectrally selective glass and the SolarVue® and SolarShield® ranges.

### DOUBLE GLAZED UNITS

Two or more pieces of glass separated by a spacer. The airspace between the glass is critical to the insulation value of the unit. The units are designed for thermal insulation, but have the welcome advantage of reduced noise levels and lower total solar energy transmission.

### FLOAT GLASS

The foremost method of manufacturing normal glass is by the float method. Molten glass is poured onto molten tin, on which it floats. The glass cools to a solid as it passes over the tin and is then lifted off the tin onto rollers.

### INTERLAYER

The layer between two pieces of glass which is used to make laminated glass. PG SmartGlass® always uses polyvinyl butyral (PVB) for this purpose. The interlayer imparts additional properties to the glass including safety, security, solar control, light control, UV control, colour and sound absorption.

**IGDB** - International Glazing Data Base

### LAMINATES

Normal Strength (**NS**) laminated glass complies with SANS 1263 Part 1.

High Penetration Resistant (**HPR**) laminated glass complies with SANS 1263 Part 1.

High Impact (**HI**) laminated glass complies with SANS 1263 Part 2.

### LAMINATED GLASS

Two or more pieces of glass joined together by an interlayer. The lamination process combines the properties of glass with the properties of the interlayer. PG SmartGlass® laminated glass that is correctly marked is a safety glass. However, unmarked glass or some other brands of laminated glass do not qualify as safety glass.

### LOW E

A coating added to the surface of a glass which increases the thermal insulation of the glass or PG SmartGlassX2™ unit it is a part of.

### NOISE CONTROL ISO RATING/STC

A single-number weighted average used to define the sound insulation of the glass. The number can be used to compare two pieces of glass (or PG SmartGlassX2™ units) but must not be used to design or predict sound levels within a space.

### PERFORMANCE MEASURING STANDARDS

**NFRC** - National Fenestration Rating Council  
100-2010

**SAGDB** - South African Glass Data Base

### SCREENED GLASS

Glass which has had a pattern applied to it using the silkscreen process. The screen is fired into the glass during the toughening process.

### SHADING COEFFICIENT

The ratio of total solar energy transmission of glass compared to the total solar energy transmission of ordinary 3 mm glass. The higher the shading coefficient, the more solar heat is allowed into the building. This measurement is dependent on environmental factors such as wind and inside and outside temperatures.

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### S.H.G.C. (Solar Heat Gain Coefficient)

This figure is obtained by dividing the total solar transmission by 100, to factorise it e.g. a glass having a total solar transmission of 50% will have an S.H.G.C. of 0.50 (  $50 / 100 = 0.50$  )

### SOLAR ENERGY

All energy received from the sun on the surface of the earth. This includes the energy from the ultraviolet, visible and infrared segments of the solar spectrum. For reasons of standardization solar energy is measured between the wavelengths 280nm to 2500nm.

### SOLAR ENERGY ABSORPTION

The higher the absorption the higher the thermal stress and the more likely the glass to crack if incorrectly glazed.

### SOLAR ENERGY DIRECT TRANSMISSION

The part of the sun's energy which passes directly through the glass. This is independent of environmental conditions.

### SOLAR ENERGY REFLECTION

The part of the sun's energy which is reflected by the glass or glazing system. This is independent of environmental conditions.

### SOLAR ENERGY TOTAL ELIMINATION

The part of the sun's energy stopped by glass or the glazing system. The effectiveness varies in accordance with environmental conditions. In warm climates, glazing systems are compared using the American Society for Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) summer daytime conditions. The environmental conditions, which affect solar heat elimination, include air speed against both surfaces of the glass, and temperature (also on both surfaces of the glass).

### SOLAR ENERGY TOTAL TRANSMISSION

Added to Solar Energy Direct Transmission is the energy that is radiated into the building from warm glass. This is dependent on environmental conditions.

### SOUND CONTROL

- The sound control rating of glass is expressed as a weighted sound reduction index (RW) measured in decibels (dB).
- Conventional laminated glass with a single normal strength (NS) vinyl interlayer is rated at 33 dB.
- SoundPrufe® with a 0.76 mm HPR interlayer is rated at 37 dB and provides a noticeable improvement in sound reduction.

SoundPrufe® performs better at lower temperatures because the SoundPrufe® interlayer retains its sound reducing properties better than traditional PVB interlayers.

In addition to a better weighted sound reduction index, SoundPrufe® ensures superior dampening across the coincidence dip - a frequency range in which glass of a specific thickness typically become more transparent to sound waves.

### SOUND REDUCTION INDEX

- Rw is the weighted sound reduction in decibels to create a correction suitable for aural response.
- Every 10 dB is perceived as twice as loud, so that a 20 dB reduction would reduce the noise level by four times.

### THERMAL BREAKAGE

Thermal breakage refers to annealed glass cracking because of build up of excessive thermal stress caused by varying temperature gradient across the glass.

### THICKNESS

The thickness of ordinary float and rolled glass is normally described as the nearest whole number, within the thickness variation. For example, 3 mm glass has a tolerance of plus/minus 0.2 mm. Laminated glass is more complicated due to the thickness of the interlayer. PG SmartGlass® describes laminated glass thickness in line with internationally accepted methods.

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### THICKNESS

Laminates are made from two or more pieces of glass. Each glass has a nominal thickness, such as 3, 4, 5 or 6 mm. The glass is laminated using a layer or layers of a polyvinyl butyral (PVB). A standard PVB has a thickness of 0.38 mm. Also available are 0.76 mm, 1.14 mm, and 1.52 mm. The thickness of a laminate made of two 3 mm glasses and a 0.38 mm vinyl is therefore 6.38 mm. Two 3 mm glasses and 0.76 mm vinyl is therefore 6.76 mm.

### TINTED GLASS

Glass which has had a colour either incorporated into the glass itself or introduced into the interlayer of a laminated glass.

### TOUGHENED GLASS

Annealed glass which has had its surfaces placed into compression in a process similar to tempering steel. The glass is much stronger in tension - up to five times stronger than ordinary annealed glass. Toughened glass is manufactured predominantly by heating the glass and cooling it rapidly in air. Once thermally toughened, the glass will shatter if cut or drilled.

### U-VALUE

Is the measure of heat entering a building through glass via conduction. The lower the U-Value the better the insulation and the more effective the control of heat loss or gain. The U-value is dependent on environmental conditions.

### VISIBLE LIGHT

Visible light is the part of energy generated by the sun, that reaches the surface of the earth to become visible to the human eye. Technically speaking, this is a spectrum of electromagnetic radiation at wavelengths of between 380nm and 780nm.

### VISIBLE LIGHT REFLECTION

The percentage of visible light reflected from the surface of the glass, when the sun shines at right angles to the surface of the glass. The reflection

increases as the angle of the sun decreases.

### VISIBLE LIGHT TRANSMISSION

The percentage of visible light transmitted through the glass when the sun shines at right angles to the surface of the glass. Higher visible light transmission results in a more transparent appearance from the outside to create a lighter and airier interior particularly important in retail and educational environments. However, high light transmission may detract from the restfulness of a space and reduce office productivity by increasing glare on work surfaces and walls, and reducing visibility of computer and TV screens.

### WARRANTY

A limited warranty is available for all PG SmartGlass® products for a period not exceeding 10 years. The glass is warranted against manufacturing defects only. Adjudication of defects is according to the PG Building Glass Solutions and PG Building Glass Processing customer specification. The technical warranty is based on technical evaluation by PG Building Glass Solutions of the product failure. The warranty will extend to the replacement of the glass originally ordered to the original delivery address only.

### WIND LOAD

Thickness of glass has to be specified by a professional team because it is determined by the framing system as well as the wind load that in turn is determined by the location and terrain category.

For more information about PG SmartGlass® call the PG SmartGlass® Solutions centre 0860 695 695