

# Glossary of Terms



## Annealed Glass

The stresses created during glass manufacture are removed during the annealing process. Annealed glass refers to this final state to which glass is manufactured which allows for good and easy cutting.

## ASHRAE

American Society of Heating, Refrigerating and Air-conditioning Engineers.

## 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 transmission and lower total solar energy transmission.

## Float Glass

The foremost method of manufacturing normal glass

## 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.

## Specification of SmartGlass

SmartGlass must be specified to ensure correct supply. For example: Safety glazing must be marked in accordance with SABS 1263-1 and manufactured under a quality system accredited to ISO 9000. Mirror must be manufactured under a quality system accredited to ISO 9000 and an environmental management system to ISO 14000. The mirror must last for at least 120 hours in the CASS test described in ISO 9227. Glass for automotive use must be marked with SABS 1191 (for laminates) or 1193 (for toughened glass), and manufactured under a quality system accredited to ISO 9000. Security glass must be marked to SABS 1263-2 and manufactured under a quality system accredited to ISO 9000.

## Spectrally Selective Glass

Glass which is designed to allow as much visible light through as possible but as little solar heat as possible. As solar energy is also carried in the visible light part of the solar spectrum, higher solar energy elimination

is by the float glass 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 a glass. 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.

## 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. 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 InsulVue unit it is a part of.

## Noise Control ISO rating/STC

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

than 50% can only be achieved by sacrificing significant quantities of light. CoolVue is an example of spectrally selective glass.

## Strength

Referring to laminated glass, the strength is defined by the performance of the polyvinyl butyral (PVB) interlayer. NS is Normal Strength and relates to a 0.38 mm polyvinyl butyral (PVB) interlayer. HPR is High Penetration Resistance and relates to a polyvinyl butyral (PVB) thickness of 0.76 mm. HI is High Impact and relates to a polyvinyl butyral (PVB) interlayer of 1.52 mm. NS and HPR comply with the requirements of SABS 1263-1, whilst HI also complies with SABS 1263-2.

## 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. SmartGlass uses the internationally accepted method of describing laminated glass. The laminate is made from two or more pieces of glass. Each glass has a nominal thickness, such as 3, 4, 5 or 6 millimetres. The glass is laminated using a layer or layers of a plastic material, 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.

## Normal Glass

Normal glass is the basic glass which most buildings are glazed with. It forms the basis from which all other glass is derived. It is a clear glass with a uniform appearance appreciated for its smooth flat surfaces.

## 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 a glass compared to the total solar energy transmission of ordinary 3 mm glass (calculated to ASHRAE summer conditions). The higher the shading coefficient, the more solar heat is allowed into the building. This measurement is dependent on environmental factors such as wind, as well as the temperature inside and outside.

## 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 280 nm to 2500 nm.

## Solar Energy Total Elimination

The part of the sun's energy stopped by the glass or glazing system. This value will change when subjected to varying environmental conditions. In warm climates, glazing systems are compared using

## 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 — at least five times stronger than ordinary annealed glass. Toughened glass is manufactured predominantly by heating up the glass and cooling it rapidly in air. Once thermally toughened, the glass will shatter if cut or drilled.

## U-Value

A measure of the heat entering a building through the glass by 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 the energy generated by the sun, which reaches the surface of the earth and is visible to the average human eye. Technically speaking, this is a spectrum of electromagnetic radiation at wavelengths of between 380 nm and 780 nm.

## 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

the American Society for Heating, Refrigerating 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.

### Solar Energy Absorption

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

NS

Normal Strength.

HPR

High Penetration Resistant.

HI

High Impact.

glass when the sun shines at right angles to the surface of the glass. Higher visible light transmission makes a building look more transparent from the outside, and makes the interior lighter and airier, increasing the productivity of retail and educational spaces. 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 SmartGlass products for a period not exceeding ten years. The glass is warranted against manufacturing defects only. Adjudication of defects is according to the GSA Manufacturing and GSA Processing customer specification. The technical warranty is based on technical evaluation by GSA of the product failure. The warranty will extend to the replacement of the glass originally ordered to the original delivery address only.

For more information about SmartGlass call the SmartGlass Resource centre 0860 695 695

