PRESS RELEASE

Glass and frame: a critical marriage

Cobus Lourens from leading window and door manufacturer, Swartland, offers an overview on how to choose the right glass for your home's windows.

27 April 2016, Johannesburg: Glass remains the only building material that not only insulates us from the fluctuating temperatures outdoors, but it also controls the migration of light and heat into and out of our homes. Depending on the location and orientation of your home, your windows can be tailored to suit your specific needs by choosing the right kind of glass or glazing. Says Cobus Lourens from leading window and door manufacturer, Swartland: "It is helpful to understand what kind of glass is available, so that you can select the correct kind of glazing that will maximise the comfort and energy efficiency of your home."

Considerations when choosing glazing

Cobus notes: "By selecting the correct type of glass, you can enjoy the natural outdoor vistas, as well as controlling UV light and glare – allowing you to insulate your home against excessive heat loss or gain, and ensuring that you enjoy the full benefit of the solar heat in the colder winter months, but minimise it in the hotter summer months." He says that when considering which glass to choose for your home, there are three main areas to think about – namely natural light, solar heat gain and thermal conductivity:

- **Natural light:** Natural light provides a sense of orientation, affecting our surroundings, and marking the passage of time. Glass enables us to control and manipulate light to our advantage – illuminating areas naturally during the day, without the need of electricity.

- **Solar heat gain:** The solar heat gain coefficient (SHGC) is the fraction of incident solar radiation admitted through a window, both directly transmitted and absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's solar heat gain coefficient, the less solar heat it transmits. Solar heat gain can provide free heat in the winter, but can also lead to overheating in the summer. How to best balance solar heat gain with an appropriate SHGC depends upon the climate, orientation, shading conditions and other factors.

- **Thermal conductivity:** Whenever differences in temperature exist between surfaces, heat will migrate from the warmer area to the cooler area. This is true of all surfaces, however, a glazed surface is special in that it is also transparent to solar radiation, which results in free heat gain. Heat transmittance through a surface by conduction, convection and radiation is expressed by its U-value. This is the rate of heat loss per square metre for a temperature difference of 1 degree Celsius, between the interior and exterior. The lower the U-value, the lower the heat loss.

The various types of glazing

Today, there is a wide variety of glazing options to choose from, and by understanding your home's heating and cooling needs, you can determine your overall glass selection priorities. Says Cobus: "It is possible to combine energy efficient glass with other options, including glass that reduces noise, enhances the occupant's safety from intruders, and even glass that offers a high level of protection from veld fires, to create the perfect solution for your particular home. At Swartland, you can select whichever glazing best suits your needs and it can be delivered already installed in the form of Swartland's innovative Ready-2-Fit range of windows and doors, which come pre-sealed and pre-glazed directly from the factory."

He offers an overview on the different types of glazing that are available for residential purposes:

- **Clear float glass:** This is the most basic material used for windowpanes. It is visually colourless and distortion-free, and it provides a high level of light transmission. Clear float glass offers no additional performance benefits in terms of insulation or reduction in solar heat gain. It can also shatter, and may produce dangerous shards of glass if broken – it cannot be used for large format windows or doors. It is the base product for most performance glass products for windows and doors.

- **Tinted glass:** Tinted glass absorbs and re-radiates solar energy, thereby reducing sun glare, heat and providing climate control. It is manufactured by adding metal oxides to float glass, and it is available in a variety of colours, namely grey, green, bronze and blue. It can absorb as much as 45% of incoming solar energy.

- **Reflective glass:** Offering a greater level of solar control when compared to tinted glass, reflective glass is made by adding a metallic coating during the manufacturing process to create a highly reflective appearance. It is most commonly available in the following tones – clear, neutral, green, grey, bronze and blue.

- **Toughened glass:** Toughened glass is made from clear float glass that has been strengthened via a thermal tempering process. The glass is placed onto a roller table, taking it through a furnace that heats it well above its transition temperature. It is then rapidly cooled with forced air drafts, while the inner portion remains free to flow for a short time. Apart from reducing the risk of thermal breakage and increased strength, another essential benefit of toughened glass is that is will shatter into small pieces when broken, which are comparatively less harmful when compared to large shards of glass. This makes it supremely safer for residential and commercial glazing, especially with regards to large expanses of glass, such as sliding doors for example.

- **Laminate glass:** This kind of glass comprises two or more layers of glass that have been permanently bonded together with an interlayer. The lamination results in the glass panels holding together in the even of breakage, reducing the risk of harm and subsequently, laminate glass is classified as Grade A safety glass. The interlayer can be selected to deliver special performance characteristics, such as improved insulation, security, and sound insulation for example. It is available in clear, tinted, reflective and low E glass types.

- **Low E glass:** Low Emissivity glass, better known as Low E glass, has a microscopically thin coating of metal oxide on the glass surface that allows the sun's heat and light to pass through the glass into the home, while at the same time, blocking heat from escaping the room. This seriously reduces heat loss. Low E glass improves insulation by reflecting the radiation, rather than absorbing it. It is available in clear, neutral, blue, green and grey. Its ability to provide improved insulation properties makes tis a great insulating choice for all kinds of climates.

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