

White Paper

Selectivity

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**Australian
GlassGroup®**

Selectivity

Selectivity is a factor that looks at the relationship between Visible Light Transmittance (VLT) and Solar Energy Transmittance – ie. Solar Heat Gain Coefficient (SHGC).

Where strong Solar Control is required (eg. Commercial buildings and warm-hot climate Residential buildings), a lower SHGC value is needed - representing less heat from the sun entering inside the building, and therefore, more heat from the sun being blocked. There is a correlation between lower SHGC and lower VLT in glass products. This is because the darker the glass, the better it is at blocking heat from the sun from entering through it, and the darker the glass, the lower the VLT.

While we need significant Solar Control performance for some buildings and climates, we must be mindful of the impact of the correlating low VLT as there are comfort and health concerns associated with a lack of natural light and we also do not want to work, or live, inside dark buildings.

For any building that requires a low SHGC, rather than purely accept a glass product that meets that minimum SHGC value, it is important to investigate what that glass product looks like aesthetically as well as how much VLT it allows through. This is especially relevant whenever tinted glass, dark tinted glass, dark coatings, or coated tinted glass are considered.



eg. a dark grey tint in a 6/12/6 DGU has a very low SHGC, however it can also look near-black and allow only 8% VLT inside!

Light-to-Solar Gain Ratio (LSG)

Selectivity addresses this issue by highlighting what affect a lower SHGC value has on the VLT by using the Light-to-Solar Gain ratio (LSG). This is the VLT divided by the SHGC and a ratio of **1.25** or higher is considered to be the preferred minimum, “**Spectrally Selective**”, by allowing in desirable levels of daylight while blocking undesirable levels of heat. Such values require a softcoat LowE Double Glazed Unit (eg. Insulglass LowE Prime® at **1.26** and Insulglass LowE Plus® at **1.34** – in 6/12/6 make up with Clear secondary lite).

A ratio over 2.0 is considered extremely high performing as **2.0** allows twice the amount of light inside versus sun-heat (eg. Insulglass LowE Advance® Clear 6/12/6 at **2.03**).

The higher the Selectivity LSG ratio, the better performing the glass is at maintaining higher levels of Visible Light and yet also excellent Solar Heat blocking (eg. one of the highest Spectrally Selectivity values in the world for a DGU being Insulglass LowE Max® Clear 6/12/6 at **2.44**, or by using Low Iron as the secondary lite, **2.52**).

Spectrally Selective = Softcoat LowE

A Softcoat LowE DGU is the exception and the only glass type that can offer Spectrally Selective performance. They can also go a few steps further by offering the whole package;

- high levels of sun-heat blocking (low SHGC)
- reduce Cooling loads / reduce Cooling costs
- high levels of natural light passing through (high VLT)
- clear or only subtle neutral tones for its aesthetics
- no risk of haze that traditional hardcoat LowE coatings can have
- great acoustics being a double glazed unit
- virtually eliminate internal condensation
- some of the best Insulation properties available (low U-Value)
- reduce Heating loads / reduce Heating costs
- all of the above making it a truly effective Energy Efficient product, while looking great

It is the Softcoat evolution of technology and innovation that sees atomic layers of silver (Ag) and other metal oxides allow such performance from a single glass product. With only softcoat LowE Double Glazing (DGU) offering 'Spectrally Selective' performance, it is comforting to know that there is a full range of choices to suit multiple needs and climates. See AGG's softcoat LowE DGU offering below:



An ideal Softcoat LowE DGU for warmer climates to minimise Glare and a balance of Solar Control & great Insulation.



An ideal Softcoat LowE DGU for colder climates with maximum Visible Light, Passive Heat Gain & excellent Insulation.

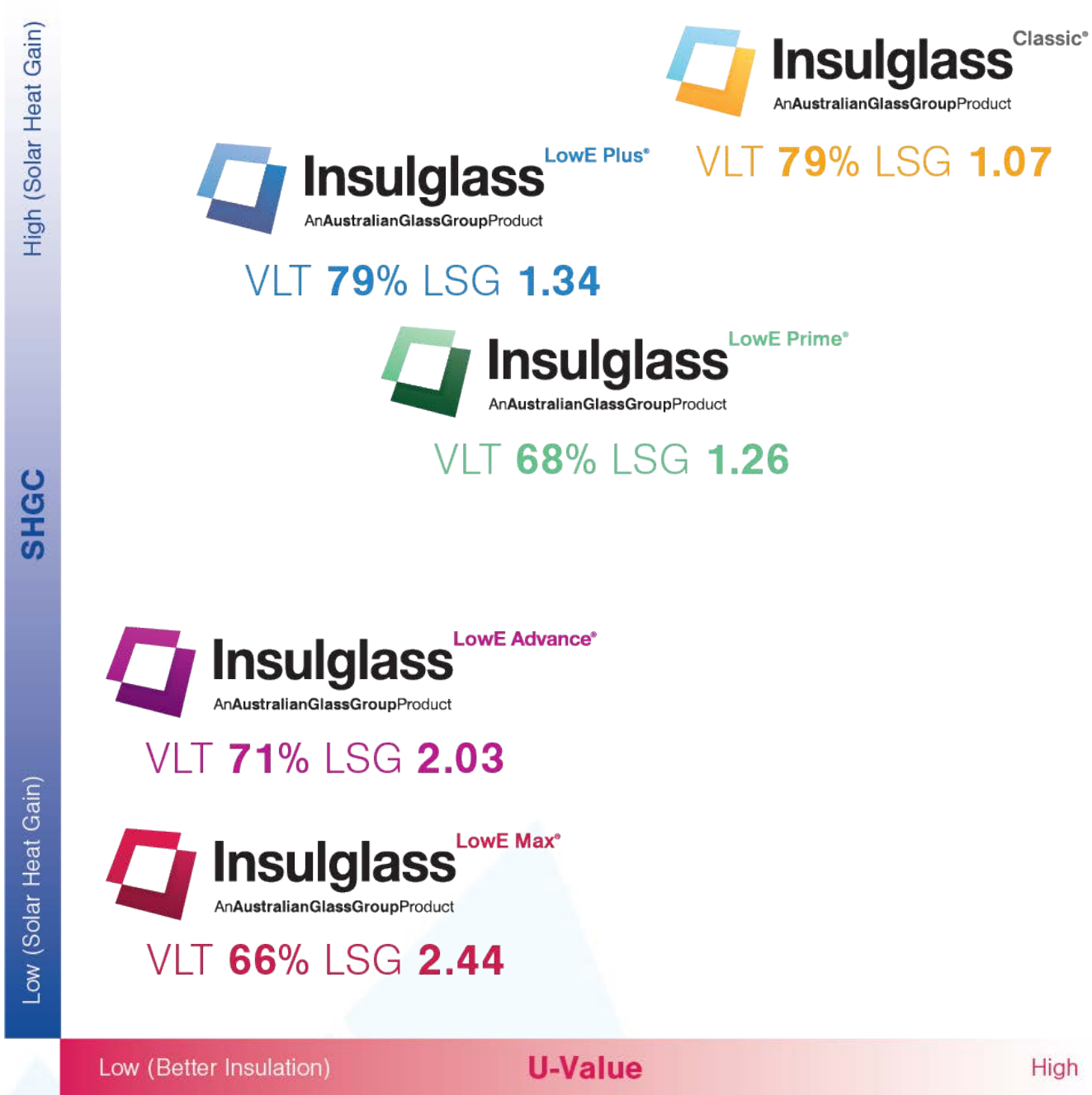


An excellent Softcoat LowE DGU to advance both Solar Control and Insulation without compromising Visible Light.



An superior Softcoat LowE DGU to maximise both Solar Control and Insulation without compromising Visible Light.

See the Spectrally Selective values of these products below in 6/12/6 make up with a clear secondary lite - ordered by their SHGC and U-Value performance and also compared to a standard clear/clear Insulglass Classic® (no LowE coating):



See our website for more detail on our product offerings: <https://agg.com.au/our-product-range/>

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