An MHG Company

EnviroTone™ Plus

High Performance Toned Glass

solos glass
see the possibilities

EnviroTone™ Plus High Performance Toned Glass

Coated glass products

Whilst EnviroTone™ and EnviroTone™ Plus provide excellent and cost effective solar control benefits, glazed either monolithically or as part of an IGU, their performance boundaries are often set by their reliance on the different tones inherent within the respective product to control the amount of light and heat transmitted into the building.

Where higher levels of solar radiation control performance are required from the glass, different types of coated glass can be used to both reflect and absorb higher levels of solar radiation as well as providing an improved balance between the desired aesthetics and the cost effective energy management of a building.

Increasingly however, the demands placed on both the glass and the overall window installation to improve overall energy efficiency has driven increased use of Low Emissivity (Low E) coated glass.

The development and increased use of of Low E glass technology in both commercial and residential windows and doors, especially when incorporated with other glass types within an Insulated Glass Unit (IGU), has improved the glass' overall ability to filter the levels of visible light and heat entering (VLT & SHGC) through the glazing as well as helping to manage the amount of heat escaping (U value) from the building to the outside.

See the SOLOS Glass Performance Guide for further information.

'There are both similarities and significant differences between the way that coated glass is manufactured depending on both the type of coated glass and the performance characteristics required.

Each type of coating is distinctly different and the methods of applying the coatings equally so. The resultant coated glass types each have different properties, benefits and levels of performance criteria as well as differing in the way that they can be processed and subsequently fabricated.

Coated glass can be manufactured by two distinctly different methods:

- 'Pyrolitic' or on-line (hard) coated products
- 'Sputtered' or off-line (soft) coated products.

Coated glass performance data

Glass Product	Normal Thickness	Visible Light Trans.	Visible Light Refl. Out	Visible Light Trans.	Visible Light Refl.	UV Trans.	U-value W/m2-C	SHGC	Shading Co.
EnviroTone™ Plus									
Grey	6	9	4	8	4	1	5.8	0.35	0.41
Green	6	65	8	33	6	13	5.7	0.51	0.58
Blue	6	53	6	33	5	23	5.8	0.52	0.60
Dark Grey	5	20	5	39	5	40	5.8	0.57	0.65

*All four glasses offer excellent performance when glazed as part of a KlymetControl® IGU in combination with a KlymetShield™ Low E glass. See the SOLOS Glass Performance Guide for further information.

EnviroTone™ Plus High Performance Toned Glass

The manufacture of On Line (Pyrolitic) coated glass

The manufacture of hard coated, on line pyrolitic coated glass is achieved by depositing micro thin coatings of different metallic oxides on the glass surface during the float glass manufacturing process. This process is commonly known as chemical vapour deposition or CVD.

By this method the coating actually becomes part of the glass during the annealing or cooling phase of glass manufacture. The resulting coated glass products are extremely hard and durable enabling the glass to be handled, cut and processed as per normal uncoated glass as well as enabling the glass to be single glazed.

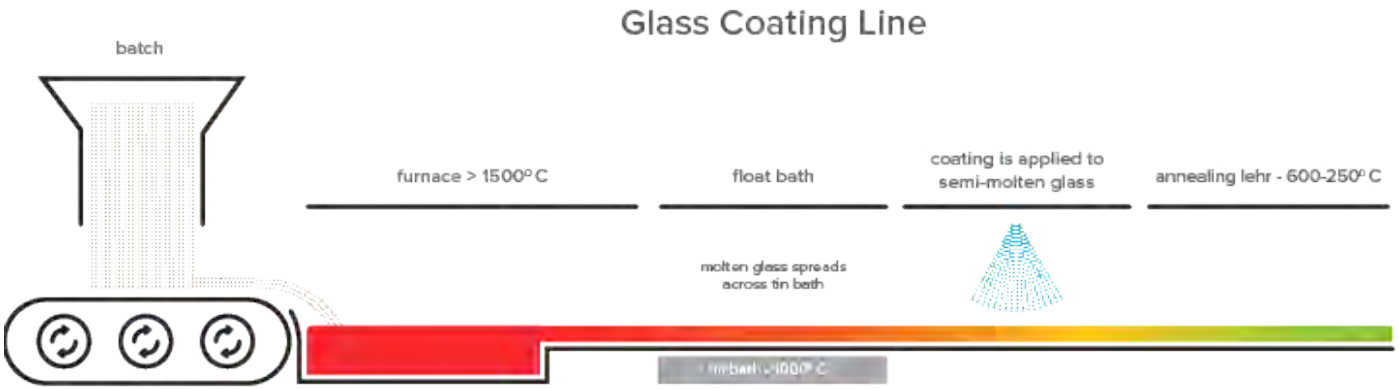
This process manufactures both reflective solar control products such as SolarFlex[3] and hard coated clear and toned Low E products such as KlymetShield™, SolTech[1] and EVantage[1]. Whilst reflective solar control products are usually only used in medium and high rise commercial applications, hard coated Low E products are extensively used in both commercial or residential applications in both single and double glazed form.

In Commercial applications this has been riven by initiatives such as NABERS and Green Star as well as by changes to Section J of the National Construction Code of Australia, as well as the increasing demand for more energy efficient buildings from building occupiers and tenants.

In Residential applications the use of coated Low E glass products has become more popular recently as legislative requirements tighten, specifically with regards to achieving specific energy ratings for windows for home design and as the cost of gas and electricity continues to rise.

Also, with increased awareness of the role that glass plays in both the overall heating and cooling performance of the home, the desire to add value to the home whilst improving the internal environment and the overall comfort of the home has become increasingly popular.

Whilst KlymetShield™ (in annealed, toughened or laminated form), can be used as a single glazed product, the desire to provide maximum possible overall window performance has seen a shift towards the installation of IGU's, such as KlymetControl®, which can incorporate a range of Low E products depending on the overall performance required.



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Reflective coated solar control glass

The range of SOLOS Glass reflective solar control products are supplied as processed single glazed products or as part of a KlymetControl® IGU mainly for use in external windows or building facades in low to medium rise commercial projects.

The purpose of the reflective coatings associated with each product is to reflect and absorb a majority of the sun's direct short wave radiation, reducing the amount of heat gain into the building and providing superior solar control than that available with clear or standard toned products.

The SOLOS Glass Reflective Coating Glass Range

Product	Normal Thickness	Visible Light		Solar Energy		UV	U-value 12mmArgon	SHGC	Shading Co.
		Trans.	Refl.	Trans.	Refl.	Trans.			
Stopsol² Bronze	4+12+4	24	16	32	15	8	2.6	0.43	0.49
	6+12+6	20	12	25	11	4	2.7	0.34	0.39
Stopsol² Grey	4+12+4	22	14	30	14	8	2.6	0.41	0.47
	6+12+6	17	10	32	10	5	2.7	0.32	0.37
SolarFlex³ Blue	6+12+6	8	17	17	14	3	2.8	0.17	0.20

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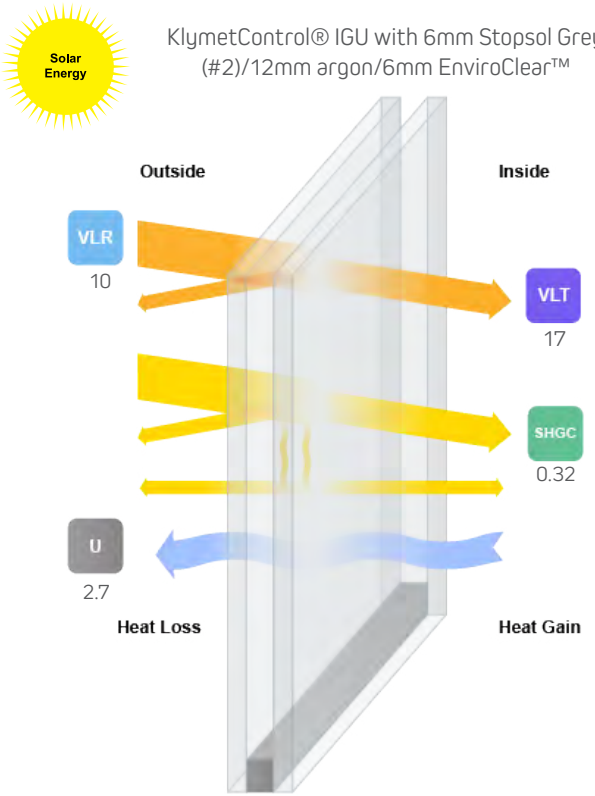
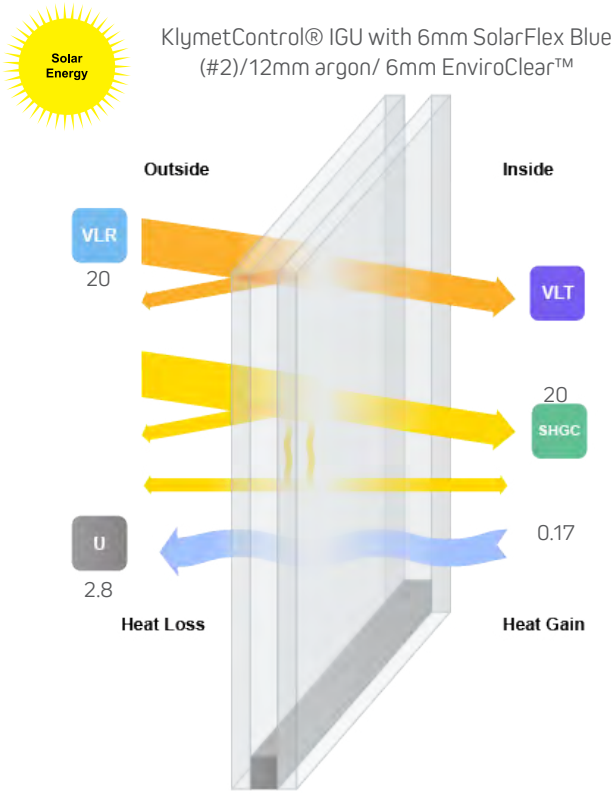
Reflective Coated Solar Control Glass

The role and performance of reflective solar control glass provides an ideal solution for commercial glazing applications where a specific performance criteria and/or aesthetic look is required. By offering varying levels of reflectivity combined with a range of different coloured glass substrates, not only can the amount of solar heat transmission and therefore the solar heat gain into a building be reduced, but suitable levels of light transmission can be also allowed into the building in combination with effective glare control, excellent levels of privacy and a dynamic external appearance which changes in conjunction with its surroundings.

Reflective solar control glasses can provide effective levels of energy management, especially when glazed in conjunction with a low emissivity glass within a KlymetControl® IGU and play an important role in providing a range of unique performance and design benefits. However, as the need to better balance the levels of light transmittance, solar heat gain and thermal insulation becomes increasingly prevalent, products offering coatings which combine both solar control and low emissivity properties are becoming more and more popular





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Solar Control with Low E Glass

The increased demand for energy efficient coated glass products within both commercial and residential buildings across Australia in recent years has seen the development of both clear and solar control coated glass products with low emissivity (Low E) characteristics which provide both moderate to high levels of solar control, excellent daylight transmission, lower levels of reflectivity and high levels of thermal insulation.

SOLOS Glass offers a number of different Low E glass products which offer a range of performance levels dependent on the application and the aesthetic or overall level of energy efficiency required.

Each Low E glass based solution provides different performance parameters with regards to the balance across SHGC, light transmission and thermal insulation. As such, with such a broad range of solutions on offer, the designer or specifier has a number of choices when choosing a buildings appearance as well as its performance characteristics.

What is Low Emissivity?

Low Emissivity describes the ability of a surface, in this case the surface of the glass, to both absorb and re-radiate heat. The lower the emissivity of the glass, the less heat is absorbed by the glass and re-radiated, or emitted, from the warm side of the glass to the cold side of the glass.

Low Emissivity glass essentially has two key roles:

- Improve the overall insulation performance of the glazing. As implied by then term, because Low E glass has a low emissivity and therefore a low U value, it acts as good insulator, reflecting heat back into the room and reducing heat loss. This function is particularly important in cool or cold climates where the insulation of the building and the reduction of heat loss is of prime concern.
- Enhance the overall solar control properties of the glazing, especially when the coating is applied to one surface of a solar control glass. If a solar control glass has a Low E coating applied, for example KlymetShield™ Grey, the coating helps reflect out the heat which has been absorbed within the substrate of the solar control glass, assisting in reducing the overall amount of heat transferring from the outside to the inside; ie, reducing the Solar Heat Gain Co-efficient (SHGC). In such circumstances the coating would still be on surface 2 if the glass was single glazed (Hard coated Pyrolitic Low E glass types only).

  The coating would also be on surface 2 if glazed as part of an IGU, regardless of whether the Low E was a ‘hard’ or a ‘soft’ coat.

Measuring Emissivity

Measured on a scale of 0-1, the lower the emissivity of the glass, the lower the U value and the better the insulation.

If the emissivity of a single piece of 4mm EnviroClear™ clear float glass is compared with that of a single piece of 4mm KlymetShield™ Low E glass, it can be seen that:

EnviroClear™ standard clear float glass has an emissivity of 0.84, which is very high, meaning that uncoated standard clear float is a very poor insulator.

KlymetShield™, a pyrolitic coated Low E glass, has an emissivity of 0.17 which is very low in comparison. This indicates that only 17% of the heat hitting the surface of the glass is absorbed and re-emitted to the cold side of the glass with 83% of the heat being reflected back to the room side.

KlymetShield™ is therefore a far better insulator than EnviroClear™ and, by inherently having a lower U value, reduces the amount of heat which escapes from the room to the outside, or, indeed, reduces the amount of heat which can be transmitted from the outside to the inside.