What is Low E Glass?

Low-E glass also called Low-Emissivity glass, It is a coating of multilayer metals or other compounds on the surface of glass. The coating has the characteristics of high transmittance of visible light and high reflection to the mid and infrared rays, so it has excellent heat insulation effect and good light transmittance compared with ordinary glass and traditional architectural coating glass.

Glass is an important building material, with the increasing demand for building decoration, the use of glass in the construction industry is also increasing. However, today people choose glass doors and windows in buildings, in addition to considering its aesthetic and appearance features, more attention to its thermal control, refrigeration costs and internal sunshine projection comfort balance. This makes the new generation of coated glass family - Low-E glass stand out, become the focus of attention.

Advantage of Low-E Glass

Excellent thermal properties

The heat loss of windows and doors is the main part of building energy consumption, which accounts for more than 50% of building energy consumption. The research data show that the heat transfer on the inner surface of glass is mainly radiation, accounting for 58%, which means that the loss of heat energy is reduced by changing the performance of glass,

The most effective way is to suppress the radiation on its inner surface. The radiation rate of ordinary float glass is as high as 0.84. When a silver based low emissivity film is coated, its emissivity can be reduced to less than 0.15. Therefore, building doors and windows with Low-E glass can greatly reduce the indoor heat energy caused by radiation to the outdoor transmission, so as to achieve the desired energy-saving effect.

Another significant benefit from the reduction of indoor heat loss is environmental protection. In cold season, the emission of harmful gases such as CO2 and SO2 caused by building heating is an important source of pollution. If using Low-E glass, due to the reduction of heat loss, the fuel consumed by heating can be greatly reduced, so as to reduce the emission of harmful gas.

The heat through the glass is bidirectional, and the heat can be transferred from the room to the outside, and vice versa, and simultaneously, only the heat difference problem is passed. In winter, the indoor temperature is higher than the outdoor, and the heat preservation is required. Summer indoor temperature is lower than outdoor, requiring glass insulation, that is, outdoor

heat as little as possible to the interior. Low-E glass can achieve the requirements of winter and summer, both insulation and heat insulation, environmental protection, low carbon effect.

Good optical properties

The visible light transmittance of Low-E glass is different from the theoretical 0%-95% (6mm white glass is difficult to achieve), and the visible light transmittance represents the daylighting of the room. The outdoor reflectance is about 10%-30%, and the outdoor reflectivity is the visible reflectance, which represents the intensity of reflection or glare. So far, China requires that the visible reflectance of the curtain wall is not greater than 30%.

The above characteristics of Low-E glass make it more and more widely used in developed countries. China is a relatively scarce energy country, the per capita energy consumption is very low, and the building energy consumption has accounted for about 27.5% of the total energy consumption. Therefore, the development of Low-E glass production technology and the promotion of its application will bring significant social and economic benefits.

Special cleaning brush for Low-E glass

In the production of Low-E glass, due to the particularity of the material, after cleaning machine, the cleaning brush has higher requirements. Brush wire must be high-grade nylon brush, such as PA1010, PA612 and so on, the wire diameter is better than 0.1-0.15mm. Because the brush has good flexibility, strong elasticity, acid resistance, alkali resistance and temperature resistance, the dust on the surface of the glass can be easily removed, and the surface can not be scratched.

Features & Functions

97% of the solar radiation energy is concentrated in the wavelength range of 0.3-2.5um, this part of energy comes from the outside; the radiation energy of objects below 100 degrees is concentrated in the long band above 2.5um, and this part of energy mainly comes from the indoor.

If the window is bounded, in winter or in the high latitudes, we want the outdoor radiant energy to come in, and the indoor radiant energy should not leak out. If the wavelength of radiation is bounded, the dividing point of indoor and outdoor radiant energy is at the wavelength of 2.5um. Therefore, the choice of a certain function of the room window becomes the key.

Ordinary 3mm thick transparent glass for solar radiation with 87% transmittance, the daytime radiation energy from the outside through the most;

but the night or rainy weather, from indoor objects radiation energy absorbed by the 89%, so that the glass temperature, then its heat distribution to indoor and outdoor radiation and convection exchange. It can not effectively prevent indoor heat leak to the outside.

Solar radiation Low-E hollow glass of 0.3-2.5um has a transmittance of more than 60%, the day from the outdoor radiant energy through the most, but the night and rainy weather, the thermal radiation from the indoor objects more than 50% is reflected back to the indoor heat radiation, less than 15% of the absorbed through the re radiation and convection exchange losses it can effectively prevent the indoor heat leak to the outside. This characteristic of Low-E glass makes it have the function of controlling the heat energy flowing into the outdoor direction.

The short wave of sunlight passes through the window glass and irradiates the objects on the interior. These items are heated and will radiate again in the form of long waves. These long waves are blocked by the "Low-E" window and return to the interior. In fact, the radiation is reduced to 85% by window glass, which greatly improves the insulation performance of window glass.

Classification of Low-E Glass

As different Coating layer number, at present main have 3 kinds Low-E Glass. Single sliver Low-E Glass, Double sliver Low-E Glass, Three Sliver Low-E Glass.

Single silver Low-E glass

The single silver Low-E coated glass usually contains only one functional layer (silver layer), plus other metal and compound layers, and the total number of layers reaches 5 layers.

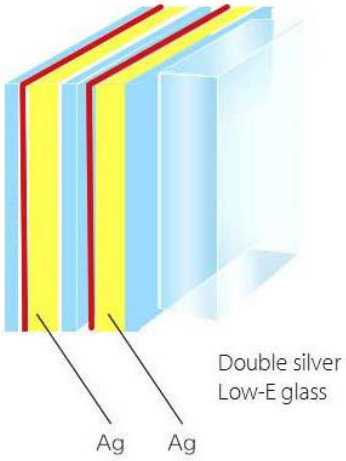
Double silver Low-E glass

Double silver Low-E coated glass has two layers of functional layer (silver layer), plus other metal and compound layer, the total number of film reaches 9 layers. However, the technological process control of double silver Low-E glass is more difficult than that of single silver.

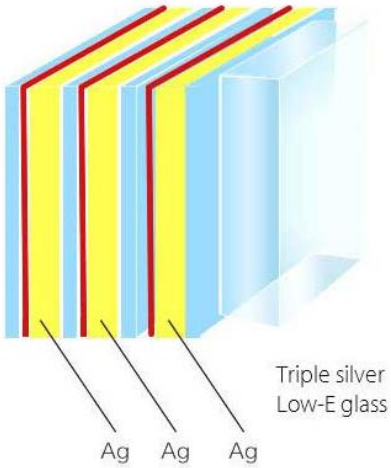
Three Silver Low-E Glass.

Three Silver Low-E Glass.coated glass has two layers of functional layer (silver layer), plus other metal and compound layer, the total number of film reaches 13 layers. However, the technological process control of is most difficult than others.

Double silver low-E glass (7-9 Layers)



Triple silver low-E glass (12-16 Layers)



The Silver layer more, When the shading coefficient (Sc) is the same, more sliver layer the transmittance of visible light is higher than that of single silver Low-E. In short, double silver and three silver Low-E glass highlighted the glass on the shielding effect of the solar heat radiation, high light transmittance of the glass and the solar heat radiation and low permeability cleverly combined together, successfully solved the problems exist dual advantages of high transmittance and low U value, Sc value, so it has better energy saving effect this is, any other glass can not have the advantage.

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