

## **What is double glazing (Insulating glass)?**

Double Glazing also is called Insulating glass, or double-pane, or hollow glass. Our double Glazing produce in china.

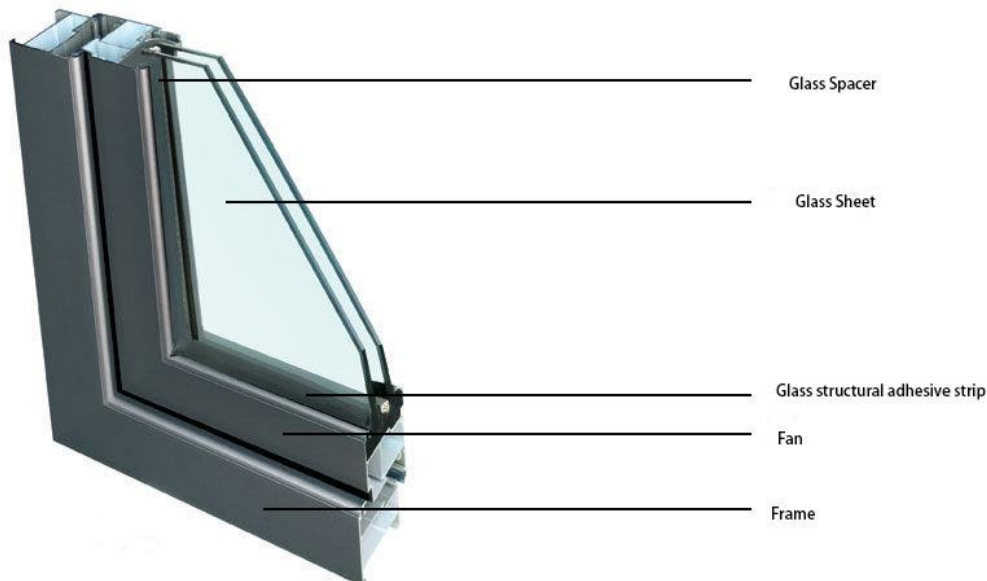
Double Glazing (Insulating glass) was invented by the Americans in 1865. It is a kind of new building material with very good heat insulation, sound insulation, beautiful and suitable, and can reduce the weight of building.

It is made of two pieces (or three pieces or more) of glass, using high strength and high air tightness compound adhesive, and the glass sheet is bonded with the aluminum alloy frame containing desiccant to make the sound insulation glass with high efficiency. Double Glazing performance is superior to ordinary glass, so it has been accepted by other countries in the world, Double Glazing is two or more pieces of glass to effectively support evenly spaced and sealed around the edge, the glass products with dry gas space formed between the two layers of glass. The main materials are glass, warm edge spacer, bending angle plug, butyl rubber, polysulfide rubber and desiccant.

### **Structure of Double Glazing(Insulating Glass)**

The insulating glass (Double Glazing) is made up of two or more layers of flat glass. Surrounded by high strength and high air tightness compound adhesive, two or more pieces of glass are bonded and sealed with sealing strip and glass strip. The air is filled in the middle, and the desiccant is used in the frame to ensure the air dryness between the glass pieces. Glass may be selected according to the requirements of various properties, such as clear float glass, embossed glass heat absorbing glass, heat reflective glass, laminated glass and tempered glass and the frame (or aluminum frame glass etc.), by cementation, welding or welding.

Its structure is shown in double layer hollow glass section. Hollow glass can be used 3, 4, 5, 6, 8, 10, 12mm thick slice of original glass, air layer thickness can be used 6, 9, 12mm interval.



The thermal conductivity of glass is 27 times as much as that of air. As long as the insulating glass is sealed, the insulating glass is in the best insulation effect.

There is a certain space between the glass and the glass of the insulating glass. A desiccant is used in the frame to ensure air drying between the glass sheets. The distance between two layers of insulating glass is generally 8mm.

High performance hollow glass is different from ordinary insulating glass, except at the middle of the two layers of glass sealed in dry air, but also on the outside of the glass in the middle layer of air side, special coated with a layer of thermal performance of metal film. It can cut off the equivalent energy from the sun into the room, and play a greater thermal insulation effect.

### **Principle of Double Glazing**

Because the Double Glazing (hollow glass) exists can adsorb water molecules desiccant, gas is dry, the temperature is reduced, the internal hollow glass does not produce condensation phenomenon, at the same time, the outer surface of the hollow glass dew point will rise. Such as when the outdoor wind speed is 5m/s, the indoor temperature of 20 degrees Celsius, relative humidity is 60%, 5mm glass in the outdoor temperature to begin condensation 8 DEG C, and 16mm (5+6+5) hollow glass under the same conditions, the outdoor temperature is -2 DEG C when condensation, 27mm (5+6+5+6+5) three layers of glass at room temperature outside -11 C before condensation.

There are three ways of energy transfer in hollow glass: radiation transfer, convection transfer and conduction transfer.

### **Radiative transfer**

Radiation transfer is the transmission of energy through radiation in the form of radiation, which includes visible, infrared and ultraviolet radiation, just like the transmission of sunlight. Reasonable allocation of insulating glass and reasonable insulating layer thickness of the hollow glass can maximize the reduction of energy transmission through the radiation form, thereby reducing the loss of energy.

### **Convection transfer**

Convection is due to a temperature difference between the two sides of the glass, causing the air to drop on the cold side and rise on the hot side, causing convection of the air, resulting in the loss of energy. There are several reasons for this phenomenon: one is the poor sealing frame system and the surrounding glass, causing gas exchange inside and outside the window can directly cause convection, leads to the loss of energy; the two is to design the internal spatial structure of the hollow glass is not reasonable, resulting in the air in the hollow glass convection due to temperature difference. Driven by the energy exchange, resulting in energy loss; three is the temperature difference between inside and outside the structure of the whole system window is larger, resulting in hollow glass, the temperature difference between inside and outside is large, cold radiation and heat conduction through air, first produced convection on both sides of the insulating glass, hollow glass and then through the whole transfer in the past, the formation of energy loss. Reasonable design of insulating glass can reduce the convection of gas, thereby reducing the convection loss of energy.

### **Conduction transfer**

Conduction transfer is through the object molecular motion, driven by the energy movement, to achieve the purpose of passing, like iron rice and electric soldering iron things, and the energy transfer of conduction insulating glass is accomplished by glass and its internal air. We know that the thermal conductivity of glass is  $0.77\text{W/MK}$ . The thermal conductivity of air is  $0.028\text{W/MK}$ , thus, the glass thermal conductivity rate is 27 times the air, air and water molecules in the active molecules, are the main factors that influence the hollow glass energy conduction transfer and convection transfer performance, thus improving the sealing performance of hollow glass, is an important factor to improve the hollow glass insulation performance.

## **Advantage of Double Glazing (Insulating glass)**

### **1, Nice energy saving effect**

High performance insulating glass, because of a special layer of metal film, can achieve 0.22-0.49 shielding factor, so that the indoor air conditioning (cooling) load is reduced. The heat transfer coefficient 1.4-2.8W (m<sup>2</sup>.K) is better than ordinary insulating glass. To reduce the indoor heating load, also play a great efficiency. Therefore, the greater the window opening, the more obvious the effect of energy saving.

## **2, Improve indoor environment**

High performance hollow glass can be intercepted by the sun to the interior of the equivalent energy, so as to prevent dizziness caused by radiant heat and relieve the discomfort caused by the sun sunset.

## **3, Rich colors and artistry**

High performance insulating glass has a variety of colors, which can be used according to the needs of color, in order to achieve more ideal artistic effect.

The use of high performance insulating glass. It is suitable for public buildings such as office buildings, exhibition rooms, libraries and other special buildings requiring constant temperature and humidity, such as computer rooms, precision instrument workshops and chemical factories. It also can be used in sunscreen and anti dazzling sunset place.

## **Application of Double Glazing (Insulating Glass)**

Insulating glass is mainly used for heating, air conditioning, noise or condensation, and the need for direct sunlight and special light on the building. It is widely used in residential, hotels, hotels, office buildings, schools, hospitals, shops and other indoor air conditioning needs. Can also be used in trains, cars, ships, freezers, doors and windows and so on.

## **Common classification of Double Glazing (Insulating Glass)**

### **1, Float insulating glass**

### **2, Toughened insulating glass**

### **3, Coated insulating glass**

### **4, LOW-E insulating glass**

Common hollow glass: 5+9A+5 double hollow. Shen doors and windows explained here refers to the thickness of the glass is 5 5mm, 9 refers to the hollow part of 9mm, the letter A is the abbreviation for air. There are also models 5+15A+5, 5+22A+5, 5+27A+5, 5+32A+5, and so on. It's not difficult to understand the meaning above.

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