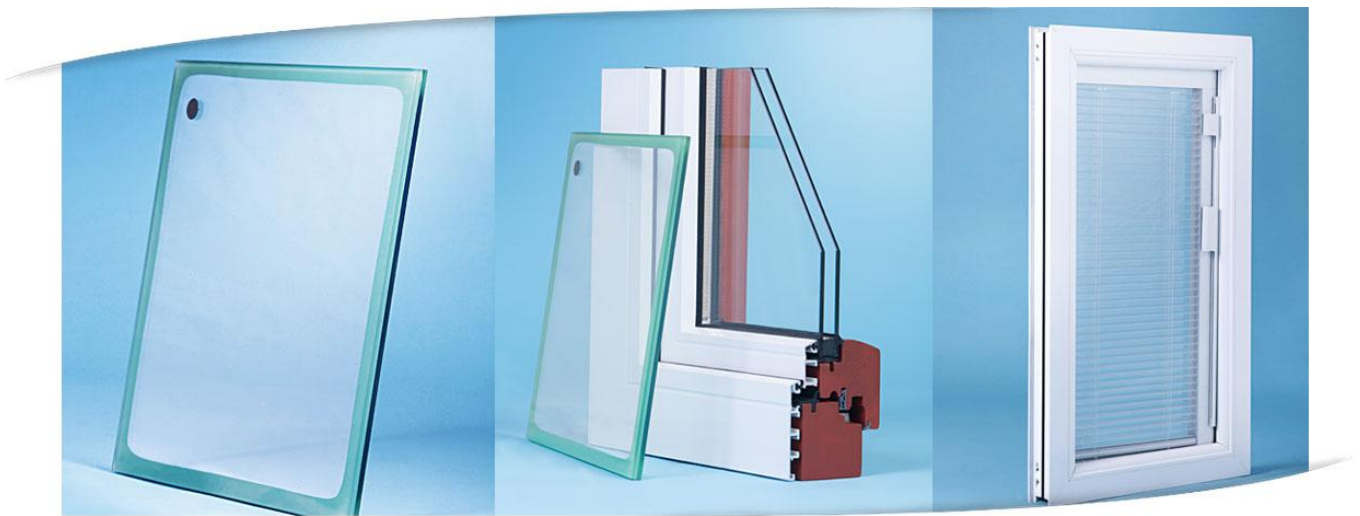


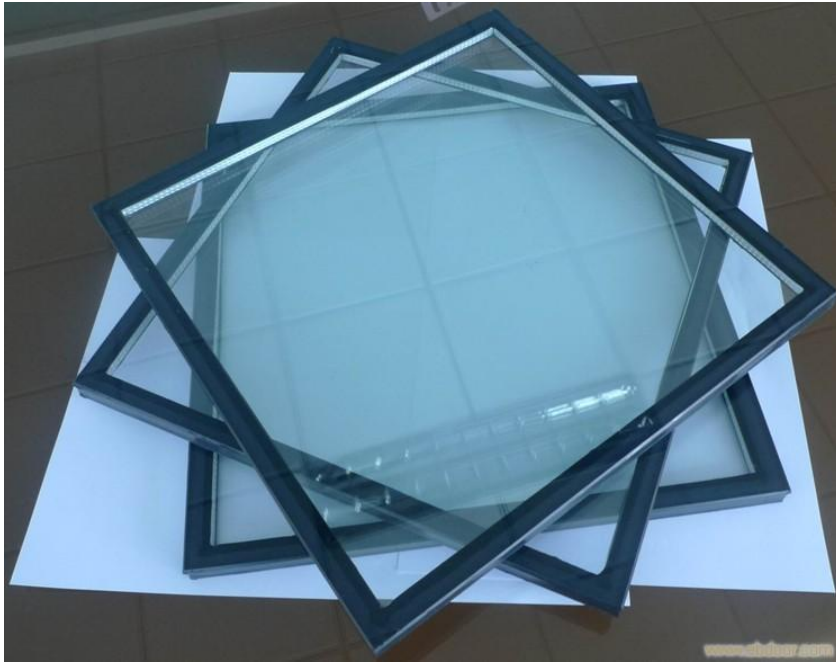
Advantage of vacuum glass

Vacuum glass as a new generation of energy-efficient glass, vacuum glass has heat transfer performance advantages, the glass takes advantage of the low thermal conductivity of air. In terms of heat transfer, the thermal conductivity of the air or filled argon has small thermal conductivity. Insulated glass dominates gas heat transfer, so that the effect of improving LOW-E glass performance to reduce radiant heat is not obvious. Insulated glass made of the best LOW-E glass (such as emissivity ≤ 0.1) is filled with argon. The U value can only be made to about 1.1/Wm²K. Only the vacuum state can eliminate the heat transfer of the gas, so that the advantages of LOW-E glass can be fully utilized.



1.1 Comparison of heat transfer between vacuum glass and insulated glass

In principle, vacuum glass can be likened to a flat-shaped thermos flask. The same point as the vacuum flask is that the interlayer of the two layers of glass is a vacuum with a pressure lower than 10^{-1} Pa, so that the heat transfer of the gas is negligible; both inner walls are plated with a low-emissivity coating to minimize radiation heat transfer. The difference between the two: First, the vacuum glass used for doors and windows must be transparent or light-transmissive, can not be coated with opaque silver film like a thermos bottle, plated with different types of transparent low-radiation film; second, from the cylinder with balanced pressure resistance Or the spherical thermos becomes a flat plate, and a "support" square must be placed between the two layers of glass to withstand an atmospheric pressure of about 10 tons per square meter to keep the gap between the glass to form a vacuum layer. The "support" square array spacing is designed according to the thickness of the glass plate and the relevant mechanical parameters, between 20mm-40mm. In order to reduce the heat transfer formed by the "heat bridge" of the support and make it difficult for the human eye to distinguish the existence of the support, the diameter of the support is small, and the diameter of the support in the current product is between 0.3 mm and 0.5 mm, and the height is 0.1. Between -0.2mm.



2.1. Due to high thermal resistance, anti-condensation and frosting performance is better

2.2 Since the interval is a vacuum, it has the following advantages:

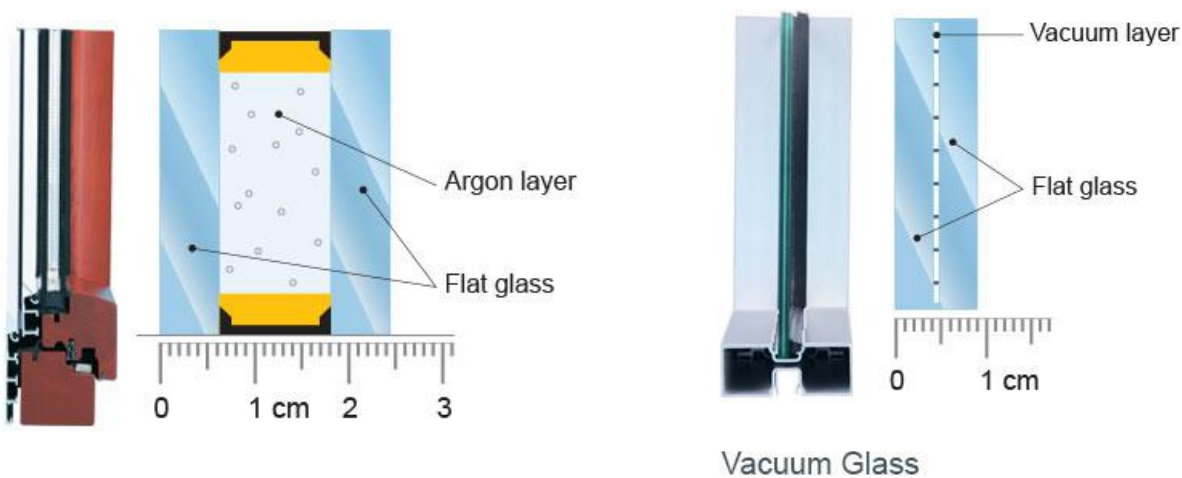
- (1) Good sound insulation performance, especially low-frequency sound insulation performance is superior to insulated glass composed of the same thickness of glass
- (2) There is no internal fog condensation problem in the presence of insulated glass
- (3) There is no problem of gas thermal conductivity change when the insulated glass is placed horizontally
- (4) There is no problem of bursting of hollow glass transported to low altitude areas of the plateau

2.3 Since the two sheets of glass form a rigid joint, the wind pressure resistance is higher than that of the glass of the same thickness. For example, a vacuum glass made of 4mm glass has a wind pressure resistance higher than 8mm thick glass, which is more than one and a half times that of insulated glass made of 4mm glass.



2.4 The thickness is only half that of the insulated glass, which not only saves the window frame material, but also can be combined into a “sandwich vacuum”, “vacuum + insulated” and “self-cleaning vacuum” as a piece of glass combined with other glass deep processing technologies. “Combined vacuum glass”. This compatibility with other deep processing technologies not only promotes the development of other technologies, but also compensates for the inadequacies of vacuum glass. For example, it is not currently

possible to manufacture tempered vacuum glass, but a combination of techniques can be used to solve the safety problem.



Insulating Glass

Vacuum Glass

The above advantages of vacuum glass give it a comprehensive performance advantage.

3. Performance characteristics of safety vacuum glass

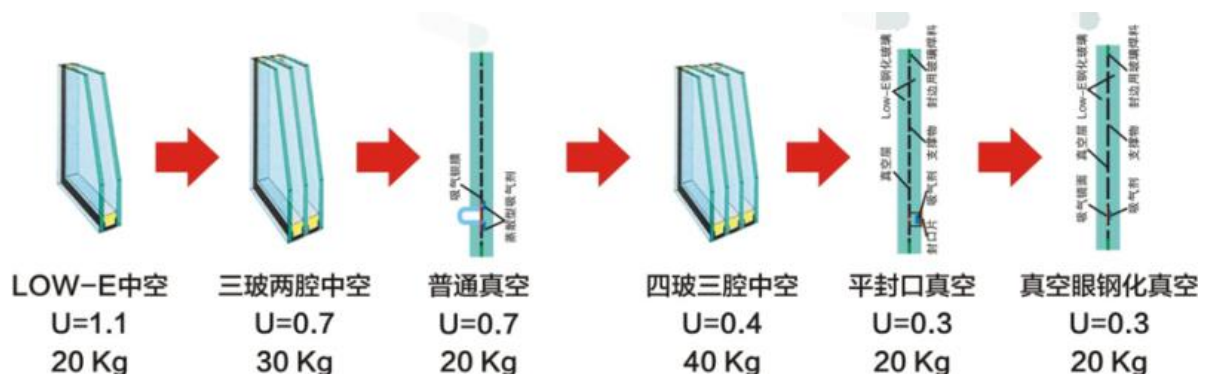
In addition to meeting safety requirements, safety vacuum glass has the following performance characteristics.

- (1) Thermal properties
- (2) Sound insulation performance
- (3) Water resistance and UV resistance
- (4) Combine new features

4. The application prospect of vacuum glass on the curtain wall

The application of vacuum glass on the curtain wall is still in its infancy, and there are still many problems to be solved. However, we cannot ignore the huge potential of vacuum glass in the field of glass curtain walls.

For glass materials, the thermal insulation performance of vacuum glass is currently in a leading position. With the development of technology, in the near future, we can use LOW-E glass with lower emissivity and also make the thermal conductivity of the vacuum glass support smaller. After calculation, if we use LOW-E glass with an emissivity of 0.05 and reduce the thermal conductivity of the existing support by half on the existing basis, the U value of the standard vacuum glass can be less than 0.5W/m²K; Two LOW-E glasses with an emissivity of 0.05 and a white glass made of double vacuum glass have a U value of less than 0.3W/M².K and a thickness of less than 10 mm.



Morn is your turnkey architectural glass supplier, we'll soon expand our business category to vacuum glass.



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Your turnkey China tempered glass/laminated glass/insulated glass supplier

Tags: curtain wall, energy efficient glass, low e glass, low e insulated glass, LOW-E glass performance, thermal insulation performance, vacuum glass, vacuum glass performance, vacuum glass U value

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Morn Building Materials Co.,Ltd is trading company offering the right facade materials for a wide range of applications for architectural,design and system requirements.Cooperating with China premium glass fabricators,Morn is able to supply whatever glass products applied in facade,Spandrel ,roof ,handrail,partition,balustrade,canopy,greenhouse,sun room ,interior exterior application.

Other facade materials:Aluminium alloy profiles,aluminium plates,aluminium windows&doors,Assa Abloy hardware,spider fitting,railing systems,shower rooms,polyurethane panels,machines&tools,steel structure, are also available since 2019.

From aesthetics, to strict environmental and energy specifications, to critical budget and delivery requirements, our input can make a difference.

Contact us:

Qingdao Morn Building Materials Co.,Ltd

China HQ: Room A304,Shengxifu Road,NO.209 Weihai Road,Shibei District,Qingdao,China,266024

Sales Email: marketing@cnmorn.com

Technical support: han@cnmorn.com

Mobile/Wechat: 0086-17705464660

Website:<https://www.cnmorn.com/>