

Safety potential of glass curtain wall

Glass curtain wall is a unique design in modern architecture. One of the biggest advantage of the glass curtain walls is that the use of various energy-efficient curtain wall glass greatly reduces the energy consumption of buildings. Many projects have been plagued by glass curtain walls. Some glass curtain walls with unreasonable design, material selection and construction have received wide attention from all walks of life due to problems such as glass breakage, glass fall, and water leakage.



Due to various unreasonable applications, glass curtain wall has many problems, such as high self-explosion rate of tempered glass, failure of structural adhesive, poor fireproof performance of curtain wall glass (ordinary), failure of glass curtain wall support structure, failure of glass curtain wall fixture, etc. We will analyze and demonstrate various security problem in the glass curtain wall, and discuss with you how to solve the problem.

Safety misunderstanding of glass curtain wall maintenance

There are many reasons for causing glass breakage.

First, the glass burst caused by the impurity nickel sulfide



Nickel sulfide does not cause any damage on the curtain wall. Temperature changes cause thermal stress and release the internal stress.

glass. Nickel sulfide itself does not cause any damage. When nickel sulfide is installed in the glass, it will cause the glass to break due to the external temperature. Minor changes in the tempered glass tension

The glass manufacturer should monitor the glass manufacturing process to minimize the contact between the nickel-containing materials and the glass raw materials. Secondly, after the installation of the curtain wall glass, there is a technology for detecting the presence of nickel sulfide impurities by photography. If it is necessary, the necessary replacement should be carried out in time to prevent the glass from being damaged after being broken. It is also possible to replace the single piece of tempered glass and the tempered insulating glass with laminated glass. If the nickel sulfide impurity is deformed due to deformation, the glass is broken and the fragments are still adhered to the film. As for the formation of glass rain, it causes damage to ground personnel.

Second, the glass broken by thermal stress

Thermal stress is an important cause of glass curtain wall breakage. There are many reasons for the heating of the glass curtain wall, but the most important heat source is sunlight. When the sunlight shines on the surface of the glass curtain wall, the glass will be thermally expanded. If the glass is evenly heated, the glass edge and the central portion of the glass will expand evenly at the same time, but if the edge of the glass and the glass are unevenly heated, and tensile stress is generated inside the glass. When there are cracks or micro cracks in the edge of the glass, these defects are easily affected by thermal stress. As the temperature difference increases, the thermal stress causes the crack to gradually increase eventually leads to glass breakage.

Solution: Firstly, the edge of the glass is finished, using fine-edged or polished edges to reduce the presence of micro-cracks; secondly, the glass is tempered to enhance the glass's ability to resist temperature changes; the third is During the processing, handling and installation of glass, the glass must be properly protected. Be careful not to collide and rub the edge of the glass with other hard objects. Strictly follow the operating procedures, especially during the installation process, if the frame is not suitable (too small or distorted deformation, be sure not to pinch the corners of the glass with pliers, be sure to correct the frame to fit the size of the glass.

Third, the glass curtain wall has poor fire resistance

The glass curtain wall has poor fire resistance. Therefore, in the design and construction of the glass curtain wall, the general glass curtain wall glass breaks in a fire.

Solution: In order to improve the fire resistance of the glass curtain wall, different fireproof glass is made of different materials according to the requirements, the fireproof insulating glass is used for the fireproof glass curtain wall.



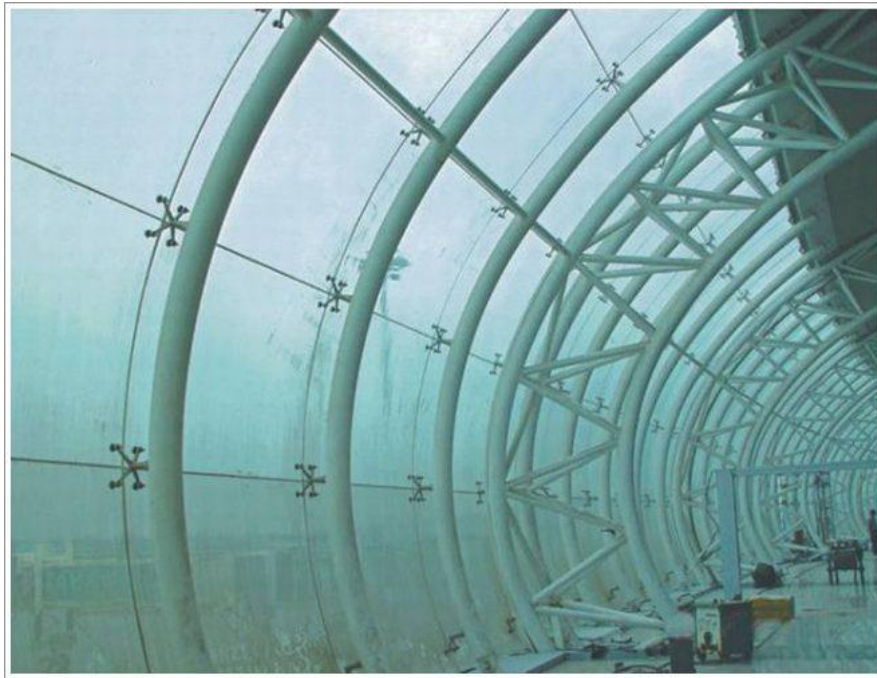
or even melt. Therefore, the fireproof glass should be fully considered. In a fire, the fireproof glass curtain wall glass will break.

According to the requirements, the fireproof glass curtain wall should be made of fireproof glass, fireproof insulating glass, or fireproof glass curtain wall glass. Among the several fireproof glass manufacturers in the domestic market, King Kong glass is more

prominent in overall fireproof and flame retardant performance, because when a fire occurs, at a certain time The inner fire surface glass is thermally cracked, but due to the presence of the fireproof film, the glass is adhered to the film without falling, maintaining the integrity of the glass. At the same time, because the film itself has a fireproof effect, it not only blocks the fire spread, but also ensures that the temperature of the backfire surface does not rise rapidly and controls the spread of the fire.

1. Curtain wall glass structural sealant failure

Because the glass curtain wall has long been affected by the unfavorable factors of the natural environment, such as wind, sun, rain, ultraviolet radiation, earthquakes, etc., it is required that the glass curtain wall must have weather resistance, durability, corrosion resistance, as a bonding material. Structural sealant has become the focus of attention. In Beijing, Shanghai, Guangzhou and other cities that used glass curtain walls at the earliest, curtain wall glass fall occurred. How to determine whether a piece of glass structural glue is invalid can be said to be difficult, but to ensure the safety of personnel and vehicles, if It is a huge expense to replace the glass curtain wall in a large area. In the face of this situation, the owners are in a dilemma.



The solution is to first limit the use of the hidden frame glass curtain wall, and must protect the glass curtain wall that has passed the quality guarantee period.

For example, fences, green belts, and hanging curtains are placed around the glass curtain wall to prevent falling glass damage and passing pedestrians and vehicles. The second is to use the bright frame and semi-hidden frame glass curtain wall as much as possible, because even if the structural adhesive fails, the chance of glass falling will be greatly reduced due to the support and constraints of the frame. At the same time, we should pay attention to the brand identity of domestic certified rubber. In the past 20 years, China's building structure silicone rubber has a series of certification parameters and standards. It is used in the industry to control the quality of structural rubber products, uniform performance standards, and improve glass curtain wall. The safety of the glue. At present, in the Chinese market, in addition to the only existing American Dow Corning and other brands, Zhengzhou Zhongyuan, Guangzhou Baiyun, Hangzhou Zhijiang, Chengdu Silicon



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Bao, Antai Construction Rubber, etc., which appeared earlier in the domestic structural adhesives, have structural adhesive properties and testing quality. Standards have met or exceeded international standards.

Glass curtain wall support structure is invalid

Not all problems with glass curtain walls are caused by the glass itself. Sometimes the failure of the frame structure supporting the glass can also cause safety problems in the glass curtain wall. The frame structure used to support the glass is often the weak link of the glass curtain wall. If the original frame system design is unreasonable, the frame structure cannot withstand the pressure inside the building, and then deformation occurs, eventually leading to glass breakage.

The solution is to anti-fatigue experiments on the frame structure during the design process, and then design the corresponding curtain wall glass according to its anti-fatigue ability to prevent the frame from overloading for a long time. Referring to the structural rationality of the frame, it is inseparable from the application of aluminum profiles. As the birthplace of China's high-quality aluminum profiles (the term "profiles" are provided by the industry's encyclopedia), Guangdong has Jianmei, Weichang, Aluminium, Weiye, First-class brands such as Xinhe; and in the north, because of the innate advantages of the electrolytic aluminum industry chain and resources in Shandong Province, famous brands including: Huajian and others emerged. At the same time, in the northwest region, Gansu Hongda Aluminum Industry, in recent years, research and development of curtain wall and door and window engineering products, occupy a good market share.

Sixth, glass curtain wall fastener fixing device failure

All glass facades rely on fasteners to assemble the curtain wall and secure it to the building. However, the unpredictable defects of the fastener fixture may cause serious structural problems and even cause the curtain wall to fall.

Solution: Before installing the glass curtain wall, carry out the necessary inspection on the fasteners. After the inspection is passed, it can be installed and used on site. In addition, in the actual construction process, the special lock nut is used to lock the bolt to prevent the bolt from slipping down, or a specific washer is used to ensure that the bolt does not fall off after the bolt is tightened. Fasteners, fasteners and other curtain wall hardware accessories systems need to have a unified integrity. The combination of the use of the results is expected to be excellent, it must be managed by the manufacturer's centralized quality control, the most outstanding domestically produced curtain wall hardware. Non-Jianlang hardware is the only one, and in the high-end door and window engineering, Hehe Construction Hardware, Chunguang Hardware, Lixing Yangshi, Xing Samsung Hardware, etc., occupy an absolute leading brand position.

Other problems caused by the glass curtain wall

The glass curtain wall has caused more than the above problems. Due to the large-scale use of the glass curtain wall, there will be some related problems arising from the design, construction and improper selection

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Your turnkey China tempered glass/laminated glass/insulated glass supplier of materials. However, as designers, producers, and users have to fully understand and develop their strengths and avoid weaknesses, the glass curtain wall is therefore the only choice for the high-rise building's outer protective structure because of its light structure, easy maintenance, and aesthetics. A bright spot in modern architecture.

Tags: **energy-efficient curtain wall glass, fire resistant curtain wall, glass curtain wall, Glass Self-explosion, glass structural sealant, insulating glass, laminated glass, tempered glass**

About Morn Building Materials:

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.

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