

Shower Enclosure Glass Tempering Process & Risks Associated.

Introduction

Tempered glass is a popular choice for various applications because of its strength and safety features. While it is known to be durable, there are still rare cases of tempered glass shattering. This guide aims to explain the reasons for shattering, how tempered glass is made, its strengths and weaknesses, and how to prevent failures.

Tempered Glass

Tempered glass is a type of glass that is four times stronger than ordinary glass. When broken, it fractures into small, relatively harmless pieces instead of jagged shards. Tempered glass is used in environments where human safety is crucial, such as car windscreens, doors, enclosures, microwaves, and patio furniture.

Tempering Process

The process of tempering glass involves several steps. First, the glass is fabricated by cutting it to size, edging it, etching it, and cutting any holes. The glass is then inspected for imperfections that could cause breakage during the tempering process.

Next, the glass is heated in an oven to 620 degrees Celsius and then cooled using high-pressure cooling to cool the outer surface of the glass much faster than the center. This results in the center being under tension and compressing the outer surface, making the glass more difficult to break.

Strengths and Weaknesses

Tempered glass has several strengths, such as excellent strength when taking a face on impact. For example, a human falling into an enclosure. In case of failure, tempered glass breaks into small shards, making it safer during disasters.

However, tempered glass also has weaknesses, such as weaker edges that can cause failures if knocked or damaged. Because of the tension within the glass, knocks, chips, and damage to the glass can cause the product to fully shatter or explode, unlike normal glass that may stay intact with minor chips.

Glass Failures

It is rare for a manufacturing defect or imperfection in the glass to be the cause of an installed enclosure failure as the glass is fully inspected prior to tempering. If an imperfection is missed during inspection, the glass is likely to fail during the tempering process.

Transport, handling, and installation of the product also present a risk of damage to the glass. Damage to the edges of the product is always possible, but the best packaging is provided to prevent this issue. Failures within the first 6 months of installation are likely caused by handling or installation. Beyond this timeframe, it is highly unlikely any damage caused by these processes would have already resulted in a failure of the glass.

After 6 months, any failure would most likely be due to accidental damage caused by end-users, either to the edge of the glass or due to a face-on impact. As mentioned previously, tempered glass is designed to offer more strength to the glass from a face-on impact, but it is still possible to damage the glass from this type of impact.