



*John Dwyer, President*

For New York's Glazing & Design Professionals

One General Motors Drive, Syracuse, NY 13206 \* 315-437-9971 \* 800-962-3211 \* [www.syracuseglass.com](http://www.syracuseglass.com)

## #9 - CHOOSING BETWEEN TEMPERED AND HEAT STRENGTHENED GLASS

Heat treated glass products, whether tempered or heat strengthened, are produced in a similar fashion using the same equipment. In both cases, the glass is heated to approximately 1200 degrees F. and cooled rapidly (quenched) to create a compression layer at the glass surfaces and edges, and a compensating tension layer in the center. The quench rate is the only difference between the processes for producing tempered and heat strengthened glass. Tempered glass is quenched with more air pressure, which creates a higher degree of compression.

Tempered glass is approximately four times stronger than regular annealed glass of the same thickness, making it very resistant to breakage on impact. If tempered glass breaks, it disintegrates into small pieces, which qualifies it as a safety glazing material.

Because of the high level of stress in tempered glass, it is subject to rare "spontaneous breakage", where the glass will break for no apparent reason. Upon breakage, it may void the opening.

Heat Strengthened glass is approximately twice as strong as regular annealed glass of the same thickness. Heat strengthened glass is used primarily to provide additional glass strength to prevent breakage in applications where high thermal stress is a concern.

It breaks, like regular annealed glass, into relatively large pieces that will tend to remain in the glazing system. This feature makes it more suitable than tempered glass for locations where even the remote chance of spontaneous breakage is of concern. For the highest assurance of glass retention in the case of breakage, laminated glass can be employed.

Heat strengthened glass is **NOT** a safety glazing material, and should not be used where safety glass is required by code or where human impact is a concern.

In summary, here are our recommendations:

- Tempered - For locations where safety glazing material is required by Law or Code
- Where human impact is a concern.
  - Where maximum strength or resistance to impact or load is required.

Heat Strengthened – For applications where high thermal stress is a concern.

- For locations where glass fallout in the event of breakage is a concern.
- For locations where safety glazing materials are not required.

