



**WINDSOR**  
WINDOWS & DOORS  
A WOODGRAIN MILLWORK COMPANY

# TEMPERED GLASS SPECIFICATIONS

Tempered glass is created by heating standard annealed glass and then rapidly cooling the heated glass to create a stress layer. When tempered glass is broken, this stress layer is what causes tempered glass to shatter into small pieces instead of large shards like annealed glass.

This tempering (heating) process causes the glass to soften slightly, which can lead to optical and actual distortion (bow) of the glass. There are national standards (ASTM: C 1048-97b) for the amount distortion allowed with tempered glass.

Our insulated glass manufacturer, Cardinal, has specifications for tempered glass bow that are ONE HALF the national standard. Cardinals glass bow standard is:

**1/32" per foot length + 1/32"**

Example: Glass size 24" (2 ft.) =  $2 * 1/32" + 1/32" = 3/32"$  max. bow

## **What does this mean for you and your customers?**

1. Tempered glass provided by Windsor is manufactured to a much tighter tolerance than the national standard
2. There can still be bow or distortion, which will be more noticeable as the glass size increases
3. Any bow or distortion will be **more noticeable with Windsorlite**
4. The allowable bow or distortion may be visually objectionable to some, but still within tolerances
5. You should advise architects, builders and building owners to NOT USE TEMPERED GLASS UNLESS REQUIRED BY CODE
6. Windsor / Cardinal will not replace any tempered glass due to bow or distortion unless it is outside of Cardinals manufacturing specifications; we have a laser device to measure the amount of glass bow in the field.

If you have any questions, please contact your Regional Sales Manager or our field service department.