



GLASSFAB
TEMPERING SERVICES, INC.

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Tempered/Heat-Treated Glass Flatness & Strain Patterns:

Due to the process of heating and cooling of glass, the original flatness of the annealed substrate is slightly modified. This inherent condition of tempered/heat-treated glass results in roller wave distortion and glass bow and warp. Glassfab maintains roller wave of 0.003" (0.076mm) from peak to valley in the center of lites, and a maximum of 0.008" (0.20mm) within 10.5" (267mm) of the leading or trailing edge. There is no industry standard for heat-treated glass roller wave; however a tolerance of 0.005" is frequently specified. Glassfab's tolerance for localized warp for rectangular glass is 1/32" (0.8mm) over any 12" (305mm), or half of the ASTM C 1048 Standard Specification for Heat-Treated Flat Glass standard of 1/16" (1.6mm) over any 12" (305mm) span.

Strain patterns:

Strain patterns are an inherent characteristic of tempered/heat-treated glass. The glass tempering and heat-treating process puts annealed glass through approximately 1,150° F to 1,200° F temperatures. Once glass reaches this temperature, the glass exits the furnace and is then rapidly cooled, or quenched. Air is blown onto the glass surface on both sides simultaneously. This cooling process creates a state of high compression at the glass surfaces while the central core of the glass is under tension. The physical value of the glass changes and improves strength and resistance to thermal stress and shock.

Heat-treated glass:

Heat-treated glass is processed through a tempering furnace same as fully tempered glass to alter its strength characteristics. The process is required in order to provide greater resistance to thermal and mechanical stresses; which helps to achieve specific break patterns for safety glazing applications as compared to annealed glass.