



*"The Leader in Glass Fabrication"™*

### **Roller Wave**

Heat-treated glass is heated to its softening point and then air quenched to make it stronger. The roller hearth furnaces used in this process support the moving glass horizontally on ceramic rollers. Since the glass viscosity is lower at the elevated temperatures intrinsic to the process, the glass sags slightly between the spans. This forms parallel ripples or corrugations in the glass known as roller wave.

When viewed in reflection or at acute angles, these deviations from a planar surface may cause a noticeable distortion. The amount of deviation is dependent on such factors as warp or bow, roller spacing, roller diameter, and thermal profile of the glass. These parameters are a function of furnace design.

Observable distortion will also vary with the background. When viewing transmitted or reflected images at acute angles, the presence of horizontal and vertical lines will give the human eye a reference point by which minor variations in flatness can be perceived. This is a subjective impression, and actual measurements must be taken to quantify the amount of distortion and determine acceptability.

Optical distortion is mentioned in ASTM C 1048 Standard Specification for heat-treated glass, but the parameters for acceptability involve viewing the glass in transmission at the proper vision interference angle. **Viracon uses extensive Quality Control procedures to ensure that distortion remains within allowable limits. Our maximum peak to valley roller wave tolerance is .003" (.08mm) in the central area, and .008" (.20mm) within 10.5" (267mm) of the leading and trailing edge.**

The heating process is the same and it is the quench rate, the speed which the glass is cooled, that determines if the glass is tempered or heat strengthened. Therefore the rollerwave distortion is nearly identical for heat strengthened or tempered glass products of the same make up.

Annealed glass products do not have rollerwave distortion but may exhibit some inherent distortion present in the float glass or from stresses placed on the glass by the glazing system.

Since rollerwave distortion is viewed in reflection any factors that change the reflection of the glass can change the perception of the rollerwave distortion.

I.e.: A reflective coating may make the distortion more apparent. An anti-reflective or low reflective coating or changing to a lower reflecting substrate may reduce the perception of rollerwave distortion.

**Roller wave distortion is typically run parallel to the base dimension to minimize visual perception as viewing the reflection horizontally is usually less objectionable or noticeable than viewing vertically.**

**Viracon will orient roller wave parallel to the base glass dimension where possible. Due to manufacturing limitations, base dimensions in excess of 84" (2133.6mm) would have roll distortion perpendicular to the base.**