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What is roll or roller wave distortion?

The process of heating float glass to a level of soft pliability, then rapidly cooling it, will always cause optical distortion to some degree. This is the case for heat-strengthened and fully tempered glass. One common form of optical distortion is roller wave. During the heating process, glass will sag very slightly between the carrier rolls that transport the glass through the furnace. After heating, the glass passes through the quench, which “freezes” the glass, creating the compression and tension that provides either heat-strengthened or fully tempered glass. However, this process can also result in a slight deviation from optically flat glass, usually seen as ripples or roller wave. Glass thickness and size affect the amount of distortion: Generally, the thicker the glass, the less deviation from flatness, while larger glass sizes may also appear to have more distortion.

To reduce optical distortion, many issues must be considered in optimizing the heat-treating process. For example, the conveyor system, furnace temperature uniformity and the quench design will all affect the optical quality of heat-treated glass. Independent Guardian Select Fabricators must demonstrate during certification they can produce heat-treated glass to commercial standards. However, because of the nature of roller wave distortion, it can only be reduced, not totally eliminated.

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