SYRACUSE GLASS COMPANY

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TECH TIPS

For New York's Glazing & Design Professionals

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#10 – EVALUATING THERMAL STRESS IN GLASS

If glass is unevenly heated, the resulting high thermal stress can cause breakage in annealed glass if the thermal stress exceeds the glass edge strength. Thermal stress in glass is increased by these **PRODUCT FACTORS**:

- heat absorbing tinted glass
- high performance solar control or low e coatings or spandrel glass coatings
- offset insulating glass units, with exposed edge seals

Additionally, **PROJECT CONDITIONS** subject glass products to thermal stress:

- exterior sun shades, over-hangs, deep mullions, signs, surface applied films, or deep sills that collect snow
- interior heat traps due to drop ceilings, blinds or drapes within 2" of glass surface, or within 1 ½" of the framing header or sill that restrict air flow
- HVAC registers blowing hot or cold air directly onto glass surfaces
- Adjacent reflective surfaces on framing materials, glass, or panels
- Hot lighting fixtures near glass surfaces

The glass manufacturers Pilkington, Guardian, and PPG offer user-friendly thermal stress analysis calculators on their websites to evaluate the need for heat treated glass. These tools do not provide a guarantee against annealed glass breakage by either Syracuse Glass Company or the glass manufacturer.

We recommend that the heat stress analysis be performed, and the decision to use annealed or heat treated glass be made by the design professional, since he or she has the most complete knowledge of the project conditions affecting the glass.

Based on our experience we can make the following general recommendations:

- When thermal stress exceeds the strength of annealed glass, select heat treated glass – either heat strengthened or fully tempered.
- Select fully tempered glass for locations where safety glazing is required by code or where human impact is a concern.
- All spandrel glass should be heat treated.
- The outboard lite of an offset insulating unit should always be heat treated.
- Any insulating glass containing a tinted outboard lite and a low e or solar control low e coating should have the outboard tinted lite heat treated.
- Any insulating glass containing high performance tinted glass (PPG Optigray 23, Graylite, Pilkington Supergray, etc.) should have the outboard tinted lite heat treated.
- Insulating glass containing any tinted glass may require heat treating if severe project conditions are present.