



## Glass Technical Document

### Moiré Pattern

A Moiré pattern is an optical phenomenon that is often seen as a wavy, rippled, or circular pattern that develops under certain conditions. Using silkscreen patterns on glass in architectural building applications may cause differences in appearance of the glass depending on lighting conditions and solar angles.

The Moiré effect is not a defect in the glass or silkscreen, and is not a cause for rejection. The pattern, rather, is a visual acuity or image that is formed by the human eye when one semi transparent object with a repetitive pattern overlaps another but the two are not aligned.

The Moiré effect, while rare, most often presents itself when the silkscreen pattern, applied to the second surface of an insulating glass unit, is reflected onto the third surface of the same unit. The resulting reflection can, in some cases, create two nearly identical overlapping patterns that are slightly offset to each other due to the inherent distortion or deflection created in the glass from the heat-treating process or due to the expansion and contraction of the unit due to changes in the temperature of the glass. Buildings under construction can be susceptible to this because they may not yet be temperature controlled. The second pattern could also be the result of light transmitting through the portion of the glass that has not been covered with the silkscreen pattern.

Due to the overwhelming number of variables involved, it is not currently possible to predict the occurrence of the Moiré pattern. However, the following conditions may increase the risk of its development:

- Closely spaced line patterns, or two glass surfaces having a silkscreen pattern
- Silkscreen patterns using closely spaced dots and holes

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-Insulating glass units installed in spandrel areas with silkscreen pattern on the #2 surface and full coverage spandrel on the #3 or #4 surface.

-Clear or Low-E coated glass w/ high visible light transmittance

-Shadow box applications w/ large spacing between the silkscreen pattern and the backup panel

-Large glass sizes with a length to width ratio of less than 2:1

-Lighter backdrops

Because moiré patterns are not a glass defect, special consideration must be given when selecting colors, silkscreen patterns, and application of the product. A full size mock-up should always be installed at the building site to better evaluate lighting and temperature conditions at different times of day.

Sincerely,

Tristar Glass, Inc.

Gregory A. Oehlers

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