PILKINGTON

Technical Information

ATS-160
2005-07-29

Fabricating and Tempering Pilkington Optiwhite™ Low Iron Glass

The lack of color in Pilkington **Optiwhite**™ low iron glass gives it very high visible and solar transmission values but with the same reflection (about 4% at each surface) as standard clear glass. This results in a significantly reduced absorption of visible and solar radiant energy. For example, the solar radiation absorption of 12mm (1/2") thick clear glass is about 30% while it is only 7% for 12mm (1/2") **Optiwhite** glass.

The composition of **Optiwhite** glass gives it an Annealing Point of 558°C, which is 10°C higher than that of clear glass. The melting point is similarly higher. These facts may be of importance for some processes other than normal tempering.

Tempering furnaces heat glass by a combination of radiation (from heating elements and hot furnace walls), hot air convection (natural or forced), and conduction (from contact with the rollers). The amount of heat received by the glass from each of these sources depends on the particular furnace design.

The particular tempering furnace settings for **Optiwhite** glass will depend on many individual variables but they can easily be determined by starting from the known and proven settings for clear glass of equal thickness.

Increasing the furnace cycle time by about 10% over the time for an equal thickness and loading rate of clear glass has been found to give sufficient extra heat to compensate for both the higher annealing point and the reduced absorption.

There should be no change to the quench air flow volume and distribution compared to clear glass settings.

The cooling rate of glass in a tempering operation is dependent on quench air flow and surface heat transfer coefficients. These do not change with **Optiwhite** glass. For other processes such as slumping or slow annealing it should be noted that the emissivity, at high temperature, of **Optiwhite** glass is somewhat lower than clear glass and will therefore affect the natural radiant cooling rate. This lower emissivity will also alter pyrometer temperature readings.

The final temperature settings and cycle time for each individual furnace will need to be determined by observing the tempered glass flatness, surface compressive stress, and fracture break pattern and particle size for each glass thickness and furnace loading rate.

Questions or comments should be directed to: Pilkington North America, Inc. Architectural Technical Services, 419 247 4448.

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