



PRODUCT BULLETIN

July 13, 2006

ACH Glass Operations
5555 South 129th East Ave
Tulsa, OK 74134

Subject: Tin vs. Atmosphere Side Visible Light Reflectance Differential of Dark Grey Glass (Versalux Grey 2000)

A trace amount of tin diffuses into the bottom surface (tin side) of glass as it is floated on molten tin during the manufacturing process. Tin diffusion into the glass surface is inherent to the float glass process and occurs regardless of manufacturer. The top glass surface is referenced as the atmosphere side and is not in direct contact with the molten tin, and therefore, does not have tin diffusion into its surface. Tin diffusion actually gives the tin side surface improved stain resistance to weathering as compared to the atmosphere side.

Due to this tin diffusion, the tin side has a slightly higher reflectance than the atmosphere side, but this is normally not detectable on clear and moderate to higher light transmitting tinted products. Determination of tin vs. atmosphere side with these products may not be critical for general fabrication, and glass is often installed with a mixture of tin and atmosphere sides facing a building exterior.

The tin side of Versalux Grey 2000 has the same amount of tin diffusion as other float glass products, but due to its lower visible light reflectance, the percentage differential of tin side vs. atmosphere side reflectance is greater, and in some instances is visually detectable. Applications of Versalux Grey 2000 with the tin side facing the exterior of a building may appear slightly lighter and more reflective than those with the atmosphere side facing out.

ACH Recommendations:

Atmosphere sides should be identified on samples of Versalux Grey 2000 submitted for aesthetic evaluation on projects and product supplied to match the sample.

During the fabrication process for a specific project, the tin/atmosphere sides of Versalux Grey 2000 should be determined, and the selected side should then be consistently oriented to the exterior of the building to ensure an acceptable aesthetic appearance.

Facilities that apply MSVD (sputter) coatings or ceramic frits should normally identify and coat the atmosphere side of a glass substrate.

How to identify Tin side/Atmosphere side:

During manufacturing, the glass is scored for cutting on the atmosphere side. The atmosphere side is referred to as the "scored" side, and can be seen visually by examining the edge of the glass.

Ultra violet lamps can also be used to identify the tin side of glass. Ultra-Violet Products, Inc., Upland, California manufactures a hand held ultra violet lamp (Product # 95-0016-14) with a wavelength range of 200 - 280 nanometers that easily detects the tin side of float glass.

Surfaces of Versalux Grey 2000 will be designated on shipments from the Tulsa Glass Plant as indicated below:

Wood cases: an arrow indicating, "score side" will be stenciled to one end of each case.

GS (stoce) packs: our placard will be affixed to the score side of the block.

Metal Racks: "score side", indicated on a placard attached to the rack.

Claims for Versalux Grey 2000 products exhibiting color differentials in final installation, which are determined to be due to mixing tin/atmosphere sides on a project will not be honored.

Your confidence in the ACH Versalux product line is appreciated.

Please contact your ACH Regional Sales Manager if there are any questions concerning product applications.