



Technical Bulletin

ATS-163
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Handling, Inspecting and Fabricating Pilkington **Solar-E™** Solar Control Low-E Glass

Summary

Pilkington **Solar E™** Solar Control Low-E Glass is a hard, pyrolytic coating on clear or tinted glass. It gives improved solar control and thermal insulation to glazed windows. The coating is tough and durable, and for most situations the product can be treated the same as uncoated glass.

Unpacking

The coated surface is hard and is not easily damaged, so cases can be opened normally.

Do not mark the coated surface with adhesive labels or wax crayons, and do not drag suction cups or metal objects across the surface. The coating will not be damaged by such materials, but it may be difficult to remove any deposited fine residues from the submicroscopic roughness of the coating.

Surface Identification

The coating is electrically conductive, so a hand-held ohm-meter (such as a Micronta #22-212 by Radio Shack), or a continuity checker, can be used to identify the coated side by touching the two probes to the coating. Take care not to drag the probes across the surface.

With practice the coating can be felt by the increased drag when a finger tip or a finger nail is rubbed on the coated side. Additionally an ordinary lead pencil will lightly write on the coating but not on the glass surface.

These techniques should be used near the edge of the glass.

A hand held meter (E-TEKT) to identify the presence of the coating within an insulated glazing unit is available from EDTM, Toledo, Ohio; tel. 419 480 1098; www.edtm.com

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Inspection

The glass can be inspected for uniformity of coating by placing it in with the coated side facing a mat black non-reflective background with a uniformly lit white surface, behind the viewer, reflected in the glass. (This simulates the viewing condition where a person outside looks at the daytime reflection of an overcast sky in Pilkington Solar E™ #2 surface coated, residential glazing.)

Inspections should also be performed in transmitted light by viewing through the glass to a uniformly bright surface.

Coating Quality Specification for Cut Sizes

When viewed in reflection or transmission, as described above, from a distance of 10 feet (3 m), the coating will not have objectionable, bands, streaks or color differences as detailed in ASTM C 1376-03. "Specification for...Coatings on Glass".

There shall be no single visible spots on the coating greater than 3/32" (2.4 mm) diameter in the outer area, or greater than 1/16" (1.6 mm) dia. in the central area.

There shall be no more than 2 readily apparent blemishes in a 3" (75 mm) dia. circle, or no more than 5 in a 12" (300 mm) dia. circle.

Fabrication

Cutting

The glass can be cut with the coating side up or down depending on preference, but coating side up is recommended to minimize marking. Cutting wheel pressures will be very similar to those for uncoated glass.

When hand cutting on the coated surface the score may feel slightly different but no change in wheel types is needed from those used with uncoated glass of the same thickness.

If the glass is to be dragged across rollers or over a poorly inflated air-float table it is preferable to have the coating side up to avoid rub marks. However, care must be taken if straight edges, metal tape measures, or cutting bars are placed on this top surface, as marking may occur which would require special cleaning techniques.

Edge preparation such as seaming or polishing should be done coated side up, as the rotation of the casters of seaming tables could cause a swirling pattern where the caster touches the coating if it is facing down.

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Washing

Automatic washing machines using hot water and detergents, such as Alconox, can be used as on uncoated glass. See Pilkington North America, Inc. ATS Bulletin #133 for details on washing techniques.

Razor blades and steel wool must not be used on the low-e coated surface.

Abrasive cleaners should be used with caution as they can cause bright or dark spots which are only seen under certain lighting conditions.

Heat Treating

As with all Low-E glasses, the coating will reflect radiant heat and so it will probably require a longer furnace cycle time to achieve the same uniform temperature as uncoated glass. Note that with the coated side facing up, the bottom surface will run hotter and will need to be watched for roller marking or center-rub from temporary warping or overheating.

With the coating up the furnace temperature settings will be similar to clear glass of the same thickness but the cycle time will need to be about 20 to 30% longer to properly heat the glass.

With the coating down, a more rapid heating will be achieved by thermal convection and conduction to the lower surface and radiation heating to the top, similar to heating uncoated glass. In this case the cycle time will only be 0 to 10% longer than for clear glass of the same thickness but care must be taken to prevent marking from the furnace rolls, and the load and unload conveyors.

The forced convection heat flow of quenching is not affected by the Low-E coating but normal quench adjustments may be required to prevent bowing or edge curl, and to obtain an acceptable break pattern.

Insulating Glass

Typically the coated surface will be on the #2 surface of an IG unit, (on the room side of the outer light). When the coating is on the #2 surface there is a lower shading coefficient or solar heat gain coefficient than with the coating on the #3 surface. Incorrectly placing the coating on the #3 surface would significantly increase thermal stress and the risk of the inside light breaking.

It is important to confirm that the glass is effectively cleaned and that full sealant adhesion is developed to the coated surface. It is the IG manufacturer's responsibility to ensure that sealant adhesion is satisfactory. To date, Pilkington Solar E™ Clear Solar Control Low-E Glass has been tested and found compatible for IG construction, without edge deletion, with Hot Melt Butyls, Polyisobutylenes, Polysulphides, Urethanes and One and Two Part Silicones.

Do not allow aluminum spacers to drag across the coated surface when assembling the units or a metal deposit will be left on the coating.

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Laminating

Laminated glass must be fabricated with the coating out, away from the PVB interlayer, to preserve the low-e effect. The Pilkington Solar E™ coating is not damaged by normal laminating processes. Care should be taken to minimize excess PVB remaining around the edge of the glass prior to autoclaving, as this is difficult to remove from the coated surface. Do not use razor blades or steel wool to remove deposits from the coated surface.

Packing

When packing Pilkington Solar E™ for shipping with the coating exposed, it is preferable to use paper or hardwood flour as an interleaving medium. Over long transportation distances, the acrylic beads in Lucor powder can be abraded and leave a deposit on the coating which is difficult to remove.

Care should also be taken to minimize the contact of Styrofoam packing materials with the coated surface. Styrofoam packing materials can leave a rub mark on the coating that is difficult to remove.

The information contained in this bulletin is offered for assistance in the application of Pilkington North America Inc. flat glass products, but **IT DOES NOT CONSTITUTE A WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Actual performance may vary in particular applications.

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