PILKINGTON

NSG GROUP

Pilkington Anti-condensation Glass
Handling and Processing Guidelines

1. Product description

Pilkington Anti-condensation Glass is an on-line, hard coated glass with a thin transparent coating applied to the external surface (surface #1). It can be combined with other Pilkington products to form an Insulating Glass Unit or used monolithically. Pilkington Anti-condensation Glass works by keeping the temperature of the external glass surface higher than the dew point of the adjacent air and, by doing so, delays the onset of condensation[1].

Pilkington Anti-condensation Glass has been tested to EN1096-2 and achieves the highest classification, Class A.

2. Product range

Pilkington Anti-condensation Glass is available on a Pilkington **Optiwhite**™ substrate in 4 mm 2550 x 3210 (LES size), 3210 x 6000 (Jumbo) and 6 mm 3210 x 6000 mm (Jumbo). It can also be offered in laminated or acoustic laminated form.

3. Delivery and storage

Pilkington Anti-condensation Glass is supplied loose on stillages. All sheets are protected with an interleavant powder to resist moisture staining and abrasion.

Pilkington Anti-condensation Glass should never be removed from cases which have been only opened at one end since sliding glass surfaces past each other may damage the coated surface.

Pilkington Anti-condensation Glass must be unloaded and stored in dry, well ventilated conditions, stacked upright and fully supported in a safe manner. The glass should be stood on edge strips of wood, felt or other relatively soft material.

The glass is a coated product and should be treated as such. Care should be taken whilst offloading and during storage to avoid marking the surface. When internally transporting individual cut size sheets or off-cuts, a wide range of separating pads, clean, non-alkaline paper or cardboard strips should be used to prevent transit damage to the coating. Separating pads should only be applied around the very edges of the glass. Harp racks may also be used provided that they are clean, in good condition and do not allow any metallic contact.

4. Handling

Although Pilkington Anti-condensation Glass is a durable, on-line coated product that is not easily damaged, care should be taken when handling it. We recommend that all forms of glass identification are always done to the uncoated surface.

When manually handling the glass, clean, dry glass handling gloves should be worn at all times to avoid leaving fingerprints. Gloves should be inspected before use and changed at regular intervals. It is essential to ensure that no metal comes into contact with the coated surface as it may result in metal deposits on the coating. The coated surface should not be marked with adhesive labels or wax crayons.

The anti-condensation coating may be handled with suction cups. The cups must be clean, dry and in good condition to prevent marking of the coating. The cups should not be allowed to slide across the coated surface and systems should be checked to ensure they are oil-free.

Always use the correct personal protection equipment when handling glass, including eye protection, safety footwear, cut-resistant apron, cuffs and gloves.

[1] Under the same conditions (same U_g-value of IGUs, temperature, humidity, wind speed, window orientation etc.), Pilkington Anti-condensation Glass will delay and, in certain cases prevent the onset of condensation as compared to the same glass without an anti-condensation coating.

Coating detector
The Pilkington Anti-condensation Glass coating and its presence in Insulating Glass Units can be identified using a simple hand-held detector similar to those used to detect a pyrolytic low-emissivity coating, such as Pilkington **K Glass**™.

5. Cutting
Sheets of Pilkington Anti-condensation Glass must be loaded onto the cutting table with the coated surface uppermost.

Automatic cutting is the preferred option, using a quick evaporating cutting oil lubricant. Cutting wheel pressures and break-out settings on automatic cutting machines will be the same as for uncoated glass.

If manual cutting is used then great care must be taken with straight edges, metal tape measures, cutting bars or cutting sticks when placing on to the coated surface, to avoid marking. Operators should wear gloves and aprons to protect the coated surface from contact with belt buckles or metal studs and care should be taken with watch straps or other jewellery. Gloves should be clean and any rubber-type gloves should be checked to ensure they do not leave prints on the coated surface.

A cutting lubricant with a fast evaporation rate should be used for scoring the glass prior to break out. Care should be taken when breaking out glass sheets to ensure the coating is not damaged.

6. Washing
The following recommendations are given for machine, hand washing, spot and specialised cleaning of Pilkington Anti-condensation Glass.

Machine Washing
Pilkington Anti-condensation Glass may be washed in a vertical or horizontal multi-stage automatic washer according to the manufacturers recommended set up instructions, using a solution of hot clean water combined with a commercial detergent designed for glass washing. The final rinse stage should be done with heated clean de-ionized water. Drying air should be filtered and directed so as not to leave water droplets on the glass surfaces.

Polypropylene brush rolls are recommended for use in the glass washing machines since they generally have a lower coefficient of friction and are softer and more flexible than nylon. If nylon brushes are used, care should be taken to ensure the brushes are adjusted correctly to avoid the possibility of surface damage. Washing machines should be designed so that the conveyor never stops with the glass underneath the washing brushes, otherwise coating damage may occur.

We recommend that a test pane is run through the washing machine before starting production. Small scratches that are caused by the washing machine may only become apparent after toughening when they have a tendency to open up. Toughening the test pane can therefore also be advantageous. Glass should then be inspected, in both transmission and in reflection and then with a bright spotlight close to the coated surface to determine if brush and/or air drying adjustments are required.

Hand washing/spot cleaning
Pilkington Anti-condensation Glass may be cleaned and maintained by hand washing using a non-abrasive, glass cleaning solution.

For hand washing, a mild detergent and water solution is recommended. Dirt should be wiped from the surface with a suitable cleaner to ensure there is no scratching to the coated surface. Detergent solution should be uniformly applied to the glass and washed with a clean, soft cloth, or sponge. The surface should then be thoroughly rinsed with clean water and wiped dry immediately.

Occasionally spot cleaning may be required to remove stubborn dirt or foreign materials that can adhere to the antiÅcondensation surface. Some spot defects and handling marks such as excess sealants or label adhesive residue can be removed from the coated Pilkington Anti-condensation Glass surface using a mild, non abrasive detergent. Isopropyl alcohol, acetone or methylated spirits, which are recommended for spot cleaning, should be applied in small quantity to a clean, dry cloth or towel, and rubbed on the areas needing spot cleaning. The glass should then be wiped using a dry, clean, lint free towel or cloth following with the routine cleaning procedure given above. Health and safety instructions provided by the supplier of the solvent should be followed at all times.

Steel wool, razor blades, abrasive cleaners, hydrofluoric acid, fluorine compounds or strong alkalis should never be used on the coated surface of Pilkington Anti-condensation Glass.

7. Laminating

Pilkington Anti-condensation Glass is suitable for lamination by either PVB autoclave or cast-in-place processes. The anti-condensation surface has been designed to face externally and should not be placed against the PVB interlayer.

The coating will not normally be damaged by either laminating process. However, care should be taken to avoid excess interlayer material adhering to the coated surface as this may be difficult to remove completely.

In the autoclave, separators should be used that do not leave residue or marks on the surface of the glass.

8. Heat treatment: heat strengthening, toughening, bending

Prior to being laminated, Pilkington Anti-condensation Glass can be heat-strengthened, toughened or bent, after it is cut to size. We recommend that Pilkington Anti-condensation Glass is thoroughly cleaned and dried prior to heat-treatment. Appropriate clean cotton or cloth gloves should be used at this stage to prevent hand or fingerprints, which could be burnt into the surface during heat-treating. The coated surface should be visibly clean before entering the heat-treatment furnace.

When heat-treating in a horizontal furnace the antiÅcondensation coating should be positioned facing upwards in order to minimize coating damage. If frit is being applied to the glass surface it may be necessary to process the glass with the coating side down, which is possible when the furnace rollers are clean and there is no risk of the glass skidding or sliding, especially when the rollers reverse direction.

The same furnace settings used when heat treating a pyrolytic low-emissivity coating, such as Pilkington **K Glass™**, may be used as a starting point when processing Pilkington Anti-condensation Glass. Toughening furnaces from different manufactures and different furnace models from the same manufacturer will have differing heating/quenching regimes.

Therefore, it is recommended that processors consult their furnace manufacturers to establish those conditions for toughening which are most suited to their particular plant and to maintaining the properties of Pilkington Anti-condensation Glass.

All heat treated (toughened or heat strengthened) glasses, coated or not, may show a soft dappled shadow pattern from the furnace quench air, especially when viewed in polarised light, therefore sample plates of heat treated Pilkington Anti-condensation Glass should be re-inspected for distortion and tested to ensure compliance to applicable safety glazing standards.

Pilkington Anti-condensation Glass has a reduced emissivity compared to uncoated glass. This will have a slight effect in the furnace section where the glass top surface can run cooler because of some radiant heat reflection. The thermal characteristics of the coated glass surface may require adjustment of the top and bottom furnace temperatures, cycle times and convection profiles. These parameters will vary from furnace to furnace.
The furnace settings for bending can initially be those for Pilkington **K Glass**™ of the same thickness.

9. Insulating Glass Units
Pilkington Anti-condensation Glass does not require edge deletion when used in Insulating Glass Units (IGUs). The anti-condensation coating is generally compatible with all major insulating glass sealants, however, specific questions concerning compatibility should be directed to the individual sealant manufacturers. The coating is designed to be used on the external surface. Plate orientation on the processing line should therefore be such that, after IGU manufacture, the anti-condensation coating is on surface #1. When assembling the IGU, contact with the coated surface should be kept to a minimum.

10. Appearance
It is the responsibility of the fabricator to carefully inspect Pilkington Anti-condensation Glass, both before and after fabrication. Glass not rejected by the fabricator during inspection prior to fabrication will be considered acceptable by the NSG Group.

Production tolerances can cause slight colour deviations between different batches. These are minimal within a production run. At a viewing distance of 3 m it is acceptable for some mottling or streaking of the coating to appear. Slight differences between adjacent panes may be visible.

11. Repeat orders, Mock up construction
In the case where glass for a project will have to be supplied over a longer period this should be indicated to the manufacturer to ensure that any colour deviations are as minimal as possible.

The construction of a full-scale 'mock-up' is recommended where the glass can be examined, from both sides, in transmission and reflection. The mock-up should be constructed and viewed on site, representing the proposed building location and viewing geometry, and should be approved prior to the final glass production.

12. Glazing
Insulating Glass Units incorporating Pilkington Anti-condensation Glass should be glazed in accordance with BS 8000: 'Workmanship on building sites – Part 7: Code of practice for glazing' and BS 6262 : Glazing for buildings.

CE

CE marking confirms that a product complies with its relevant harmonised European Norm.
The CE marking label for each product, including declared values, can be found at www.pilkington.com/CE

NSG GROUP

Pilkington United Kingdom Ltd
European Technical Centre, Hall Lane, Lathom, Nr Ormskirk, Lancashire L40 5UF
Telephone 01744 692000 Fax 01744 692880
pilkington@respond.uk.com
www.pilkington.co.uk