PILKINGTON

Pilkington **Activ Suncool**™ Pro T

Handling and Processing Guidelines

NSG GROUP

Pilkington **Activ Suncool**™ Pro T

1. Product description

Pilkington **Activ Suncool**™ Pro T is a range of toughenable dual coated products that provide self-cleaning, solar control and thermal insulation when used as a component in Insulating Glass Units.

Pilkington **Activ Suncool**™ Pro T meets the requirements of the European Standard EN1096-3 Class C 'Glass in building – Coated glass' and when toughened will comply with EN 12150 'Thermally toughened soda lime silicate safety glass'.

Pilkington **Activ Suncool**™ Pro T after toughening can only be used when assembled in an IGU. The self-cleaning coating for Pilkington **Activ Suncool**™ must be on glass surface #1 (counting from the outside). The solar control coating must be on glass surface #2.

Pilkington **Activ Suncool**™ Pro T must be thermally toughened prior to IGU fabrication to achieve the desired solar control and low-emissivity performance and final appearance.

As coatings can be damaged if not handled correctly, it is important that handling and processing is carried out in accordance with good practice, as described throughout these guidelines.

2. Product range

Pilkington **Activ Suncool**™ Pro T products are available on clear float substrate in jumbo sizes up to 6000 mm × 3210 mm. They are available in 6 mm and 8 mm thicknesses.

3. Delivery and Storage

Pilkington **Activ Suncool**™ Pro T is delivered on stillages in pack quantities and in a manner consistent with that of clear glass of similar thickness and size. It is always delivered with the solar control coated surface to the inside of the pack. Please note that the innermost glass of each pack will be a cover plate, usually 6 mm Pilkington **Optifloat**™. Pilkington **Activ Suncool**™ Pro T should be unloaded and stored in dry and 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, care should be taken when unloading glass packs to ensure that plates in the pack do not move.

Pilkington **Activ Suncool**™ Pro T has a recommended storage shelf-life of 6 months from the date of delivery provided adequate storage conditions are met. Packs should be stored where the relative humidity does not exceed 70% and the ambient temperature does not fall below 15°C.

Significant temperature fluctuations during storage that may lead to condensation should be avoided. Delivered packs should be allowed to acclimatise before opening, to help avoid condensation and potential damage to the coating.

4. Coating Detection

The two coated faces can be differentiated using a handheld detector to identify the Pilkington **Activ**™ or Pilkington **Suncool**™ coating. Edge deletion at the cutting stage will also indicate the orientation of the coatings.

5. Handling

Because Pilkington **Activ Suncool**™ Pro T is a dual coated product, some additional precautions are necessary when handling it. Wherever possible, individual plates should be moved using automatic equipment fitted with suction cups or an equivalent, in contact with the Pilkington **Activ**™ side only.

- Suction cups used on the Pilkington **Activ**™ coated surface must be clean, dry, in good condition and should not slide on the surface. More frequent sucker inspection and maintenance may be required to maintain good condition. The use of suction cup covers is also recommended (although these should comply with local Health & Safety guidelines). Care should also be taken to ensure that any sucker release compressed air supply is adequately filtered to remove traces of oil. If necessary, suction cups can be used on the Pilkington **Suncool**™ Pro T coated surface. It is recommended that suction cup covers are always used and are replaced at regular intervals.
- When handling the glass, clean, dry glass handling gloves must be worn at all times to avoid leaving fingerprints or otherwise contaminating the surfaces. Operators should be aware that any contact with hard materials is likely to result in damage to the coated surfaces. If marks are present on the coating after handling, careful attempts can be made to remove them using a solvent such as IPA and a soft clean tissue. During processing, cut sizes should be handled at the edges, where the Pilkington **Suncool**™ Pro T coating has been or will be edge deleted. For large pieces, sucker frames fitted with clean covers may have to be used on the coated surface where there is no alternative.

When internally transporting cut sizes, a wide range of separating pads, clean, non-alkaline paper or cardboard strips may be used to prevent transit damage to the coating. Separating pads should only be applied around the very edges of the glass. It is generally recommended that 'harp rack' type storage and transport is not utilised for dual coated glass due to the increased risk of scratching one or both of the coated faces.

Wax crayons or inks of any kind should not be used to mark either of the coated surfaces. Adhesive labels can be applied to the Pilkington **Activ**™ surface provided a suitable low-tack adhesive is used. Alternatively, apply identification marks to the edge-deleted region of the Pilkington **Suncool**™ Pro T surface which will generally be uppermost when processing.

6. Edge Deletion

Prior to assembling toughened Pilkington **Activ Suncool**™ Pro T sheets into IGUs, the Pilkington **Suncool**™ Pro T coating must be edge deleted to ensure good adhesion of the unit seal. The edge deletion process is ideally undertaken on-line (when cutting). The width of the edge deletion depends on the depth of the IGU seal.

The Pilkington **Activ**™ coating is always glazed as surface 1 and does not require edge stripping.

7. Cutting

Pilkington **Activ Suncool**™ Pro T must be loaded onto the cutting table with the solar control coated surface uppermost and should be cut in this position only. As the Pilkington **Activ**™ coated surface will be face down during transport, cutting and break-out stages, extra care must be taken to ensure that potential sources of scratching are removed during these stages. Prior to cutting Pilkington **Activ Suncool**™ Pro T, the cutting and break-out tables should be cleaned to ensure they are free of glass shards which might damage the Pilkington **Activ**™ coating situated on the lower surface. It is recommended that a vacuum cleaner is used although thorough brushing of the table may be adequate. The table should also be monitored during cutting to ensure that glass shards do not build up as the plates are cut. Transport rollers and belts should also be well maintained and free from sources of metallic abrasion.

- As the Pilkington **Suncool**™ Pro T coating will be face up, automatic cutting is the preferred option and it is recommended that edge deletion occurs during the cutting process. If manual cutting is performed, then care must be taken with straight edges, metal tape measures, cutting bars or cutting sticks when placing them on to the coated surface, as this may lead to marking or scratching.
- When breaking out glass sheets, care should be taken so that the coating is not damaged. Fine glass splinters on the glass surface should be removed carefully. Immediately after cutting, a sufficient amount of the original interleavant powder often remains in place to protect adjacent glasses from damaging the coating, nevertheless it is recommended that cut sizes are separated by cork pads or other suitable separation materials.
- Operators should wear appropriate glass handling gloves and aprons to protect the coated surface from contact with belt buckles etc.

8. Washing

Machine Washing

- As with any coated glass product, care should be taken while washing to prevent damage to the Pilkington **Activ Suncool**™ Pro T coated surfaces. It is essential to ensure that no metal, e.g. cleaning equipment, comes into contact with either coated surface. The following recommendations are given for machine, hand and spot cleaning of Pilkington **Activ Suncool**™ Pro T.
- Water quality is important when washing all coated products. Immediately after edgeworking but before toughening, Pilkington **Activ Suncool**™ Pro T should be washed through a multi-stage automatic washer using heated, demineralised, neutral pH water and soft cylindrical brushes. The brush fibre diameter should be no greater than 0.15 mm. A pre-rinse before entering the washing machine is advantageous.
- Initial and intermediate washing stages should use deionised water, heated to a maximum of 40°C and with specific conductivity ≤ 30 µS/cm. Fresh deionised water with specific conductivity ≤ 10 µS/cm should be used at the final wash stage.
- The washing machine should be designed so that the conveyor never stops with glass underneath the washing brushes, otherwise coating damage may occur. When using washing machines that were not initially designed for coated glass there may be a need to modify, raise or remove brush sections, barriers and internal drive rollers.
- Washing is a critical part of the process and therefore, careful attention should be given to regular maintenance routines and adjustments. Detergents should not be used in the water.

• It is important that all washers are subjected to a regular programme of routine maintenance in accordance with manufacturer's recommendations. This should include regular examination and maintenance of the transport system to remove potential sources of damage to the Pilkington **Activ Suncool**™ Pro T coatings.
• In addition, entry and exit brushes and flaps and internal drive or guide rollers may need modifying or re-setting.
• Under no circumstances should abrasive cleaners, hydrofluoric acid, fluorine compounds or strong alkalis be used on the coated surface.
• After washing, the glass should be appropriately racked and separated with cork pads in readiness for transit between process stages.
• Glass must be visibly clean and free of residue after washing, prior to tempering.

Hand Washing / Spot Cleaning

• Both coated faces of Pilkington **Activ Suncool**™ Pro T can be cleaned by hand to remove spot contamination. A mild, non-abrasive detergent (i.e. one that does not contain solids in suspension) and water solution is recommended for the Pilkington **Activ**™ coating, abrasive cleaners must not be used.
• To wash/clean the Pilkington **Activ**™ coating apply the solution to the glass with a clean, soft cloth, sponge or pad and rinse thoroughly with clean water. It is recommended that plates are then passed through an automatic washing machine after hand cleaning to ensure proper drying of the surfaces.
• Careful attempts can be made to spot clean the Pilkington **Suncool**™ Pro T coating using a solvent such as IPA and a soft clean tissue.
• Steel wool or razor blades must not be used on either of the coated faces.

9. Edge Working

Prior to toughening Pilkington **Activ Suncool**™ Pro T, the glass sheet must be edgeworked. Ideally a vertical combined grinding/ washing machine should be used. Manual, wet cross-belt arrissing is also possible. For edgeworking processes that have belt-grips in contact with the coated surface, the belts must be designed to be compatible with such coatings. The surface of the belt must also be kept clean and free of any debris. Belts should be set so that they do not apply excess pressure on the glass in order to avoid damaging the coating. As water quality is critical for the processing of all coated glass, additives such as coolants and biocides should be avoided.

• Glass must be presented to the edge working process with the Pilkington **Suncool**™ Pro T coated face uppermost/ outermost. Automatic transport and edge working are preferred, particularly horizontal diamond wheel grinding systems or vertically loaded automatic cross-belt arissing using proprietary equipment. Water lubrication both during and after grinding is highly beneficial to either method in order to minimise surface damage and contamination of the coated surfaces.
• Extra care should be taken when the Pilkington **Activ**™ coated surface is placed against castor rollers as these can frequently be worn unevenly and can leave deposit marks that are difficult to remove.
• The coated glass must not be permitted to stop under any drive belts, wheels, or rollers during the edge working stage. Otherwise the coating may be damaged.
• Usual precautions for glass processing should be taken; gloves should be worn during edge working to avoid contamination by fingerprints.
• Ensure general maintenance of the equipment is carried out. Water tanks should be emptied and cleaned regularly (at least once a day) to reduce risks of glass powder build-up. Transport and transfer belts should be kept clean. Transport systems through the edging equipment, particularly castor rollers, should also, be maintained to ensure there are no worn areas that may damage the Pilkington **Activ Suncool**™ Pro T coated surfaces.
• After edging, glass should be processed immediately through the washing machine so that deposits of glass powder do not dry on the glass surfaces.
• After any edge working process, the glass should immediately be racked, separating panes by either cork pads or an equivalent separating pad at the edges, and/or clean, vertically positioned cardboard spacers.
• It is suggested that after edge-working, the glass panes are always visually checked for damage.

10. Thermal toughening

Pilkington **Activ Suncool**™ Pro T must be thermally toughened or heat-strengthened before assembly into Insulating Glass Units. Any convection furnace capable of uniformly heating low-emissivity coated glass should be suitable for toughening Pilkington **Activ Suncool**™ Pro T. The higher reflectance of the Pilkington **Suncool**™ surface (always facing uppermost) may require adjustment of the top and bottom furnace temperatures, cycle times and convection profiles.

• Individual furnace manufacturers should be consulted to advise of the optimum conditions prior to toughening. We do not recommend the use of radiation furnaces. Dry or non-contact methods of applying toughening stamps may be used. SO_2 should not be used in the furnace when toughnening Pilkington **Activ Suncool**™ Pro T. Even residual SO_2 in the furnace from previously toughening other products may affect the coating.
• When handling the glass, suitable gloves should be used to prevent contaminating the coated surface with hand or fingerprints, which could be burnt into the surface during these processes. It is important that the coated surfaces must be visibly clean before entering the furnace.
• The Pilkington **Suncool**™ Pro T solar control coating must always be face up in the furnace when tempering. It is important to ensure that furnace rollers are clean and no skidding or sliding of the glass occurs which may cause marking of the Pilkington **Activ**™ surface. Extra care should be taken when the Pilkington **Activ**™ coated surface is placed against castor rollers as these can frequently be worn unevenly and can leave deposit marks that can be difficult to remove.
• Care must be taken not to overheat the glass during the heat strengthening or toughening process, as this can damage the Pilkington **Activ**™ coating and reduce its self-cleaning action. Overheating will normally be characterised by excessive distortion in the glass. To eliminate this problem a cooler glass temperature should be used during the process. Please note that it can be difficult to measure the glass temperature of a coated product by using a pyrometer on the coated (uppermost) surface. Shape, fracture and appearance of the coating should be regularly checked rather than relying on measured glass temperatures.
• Immediately after toughening, glass should be racked appropriately, using cork pads where necessary.

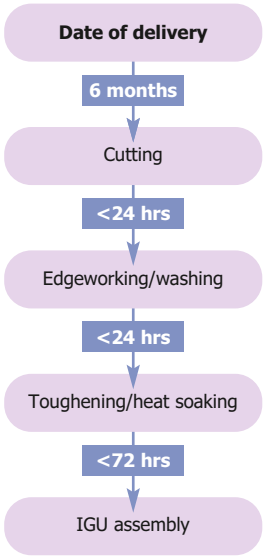
11. Heat soaking

To comply with EN 14179 'Heat soaked thermally toughened soda lime silicate safety glass' Pilkington **Activ Suncool**™ Pro T can be heat soaked in either gas or electric powered ovens without detriment to the coating. However, electric ovens are strongly preferred because there are no potentially corrosive combustion gases and there is a reduced risk of water vapour condensation inside the oven. Care should be taken to minimise the length of time between toughening and heat soaking to reduce the likelihood of damage to the coating. PTFE separating blocks may be used to separate glasses, but these must only contact the glass on the edges where the coating has been, or will be, edge deleted.

12. Toughened cut sizes

The transportation of toughened pieces of Pilkington **Activ Suncool**™ T is possible with care. Once the toughened glass sheets have cooled down, they should be separated and immediately protected in plastic wrapping with fresh desiccant bags inserted inside the pack. The wrapping should not be opened until immediately before the glass sheets are to be used. Toughened pieces transported in this way must be converted into Insulating Glass Units within seven days of toughening and within 72 hours of opening the wrapping.

13. Overview of processing times



14. Insulating Glass Units

During fabrication of insulating glass units the Pilkington **Activ**™ coated surface should be face down against the transport mechanism. Care should be taken to ensure that the unit fabrication line is in good clean working order to prevent damage to the Pilkington **Activ**™ surface. Transport rollers should be examined for signs of ageing, excessive hardening and to ensure no metallic contact is made against the coated surface. The press region of the line should also be inspected regularly and any areas of glass contact cleaned thoroughly.

The Pilkington **Suncool**™ coated surface should always face the cavity of an IGU and is designed to be used on glass surface #2 (counting from the outside). To achieve better thermal insulation, the IGU cavity can be filled with an inert gas such as argon. Suitable sealants and desiccants should be used in accordance with manufacturers' recommendations. The adhesion of most sealants, including hot melt butyls, polysulfides, urethanes and two-part silicones will be as expected for clear uncoated glass when applied directly to the edge deleted portions of the coated glass.

- During assembly the spacer bar is placed on the first glass as normal. This first glass will have the Pilkington **Activ**™ coating facing into the rollers so that it is on the outside of the finished IGU, the spacer will be placed onto the edge deleted Pilkington **Suncool**™ Pro T surface. The second glass is positioned on the spacer bar and pressed. The IGU is completed by filling the edge with sealant.
- Units can be sealed using either automatic or manual sealant application. In both cases it is recommended that contact be made to the uncoated float pane of the unit. If this is not possible and contact must be made to the Pilkington **Activ**™ surface, then clean rubber contact suckers should be used. These should be inspected and cleaned regularly and the use of 'hair net' type sucker covers is recommended. Care should also be taken to ensure that any sucker release compressed air supply is adequately filtered to remove traces of oil.
- In the event of sealant spillage onto the Pilkington **Activ**™ coated surface, a soft cloth soaked in methylated spirits or acetone should be used to remove the sealant while still wet (any Health and Safety requirements for using these chemicals should be followed). If sealant is allowed to dry the same method is recommended for its removal, but the task will be more difficult. Under no circumstances should razor blades, steel wool or abrasives be used. Once the IGU is made, care should be taken to ensure the Pilkington **Activ**™ coated surface is protected from mechanical damage such as scratching, particularly from metallic sources.
- It is recommended that any unit identification labels should be attached to the non-coated float pane. Should this not be possible then labels can be attached to the Pilkington **Activ**™ coating provided a suitable low tack adhesive is used. Wax crayons or inks should not be used on the coated surface.

18. Appearance

- Glass should be inspected upon delivery. It is the responsibility of the processor to carefully inspect both the Pilkington **Activ**™ coating and the **Suncool**™ Pro T coating before and after processing any defects must be reported immediately. Claims for defects identified after processing cannot be accepted since it is the responsibility of the customer to carefully inspect Pilkington **Activ Suncool**™ Pro T during each processing stage. In the case of any claims, both samples and the batch number of the affected glass will be required.
- No attempt should be made to remove scratches and/or abrasion marks on the Pilkington **Activ**™ coating as coating damage will occur.

Production tolerances can cause slight colour deviations between different batches. These are minimal within a production run. For projects where the coated glass has to be supplied over a longer period and therefore several coating runs, this should be indicated to the manufacturer to ensure that colour deviation is minimised. As for all solar control coated glass, for consistency of appearance we recommend using either all annealed or all toughened glass throughout the façade. Where possible we recommend that the same process route is used for any replacements.

Inspection of the toughnened product should be carried out in accordance with the EN1096-1 criteria.

19. Glazing

Once assembled into an IGU, please ensure glazing guidelines for Pilkington **Activ**™ are followed (see separate guidelines). **In particular, avoidance of contact with glazing silicone which can mask the self-cleaning performance.**

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

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