

WASHING OF PILKINGTON PYROLYTIC LOW-E GLASS

ATS-196
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Summary

Pilkington **Energy Advantage™**, Pilkington **Solar-E™**, and Pilkington **Eclipse Advantage™** are pyrolytically applied coatings with excellent abrasion resistance and durability. The surface texture of the low-e coating makes cleaning operations slightly different compared to uncoated float glass.

Following are best practice guidelines for both machine washing and hand cleaning of Pilkington pyrolytic low-e products.

Machine Washing

Automatic washing machines using hot water and detergents, such as Alconox, can be used, as with uncoated glass.

Flat glass washing machines should be properly maintained in a clean state and in good repair. There should be no difficulty in machine washing the Pilkington low-e glass products using a clean, properly maintained machine with the manufacturers recommended set-up instructions for the given glass thickness. This includes adequate water flow through all nozzles, using recommended detergent, water temperatures, proper brush height and rotation direction, and clean air knives and filters.

For best results, run the low-e surface facing up, away from the glass support rolls. This will minimize any unnecessary contact with the low-e coating. The coated surface is very hard and has a very fine texture which can abrade rubber or metal materials dragged across it leaving a deposit which would then require spot cleaning.

Pilkington pyrolytic low-e coated glass should be washed in a rotating cylindrical brush, flat glass washing and drying machine. Pilkington recommends using a detergent solution of hot 50-60°C (120-140°F) clean water and a commercial detergent designed for glass washing. The final rinsing should be with clean deionized water heated to at least 43°C (110°F). As with all washing machines, either the water should be changed on a routine basis or a continuous overflow system should be used. Drying air should be filtered and controlled in such a manner so as not to leave water droplets on the glass surfaces.

Polypropylene brush rolls are recommended for glass washing machines. Nylon brushes must be properly adjusted to avoid the possibility of coated surface damage. When selecting the proper brush for washing Pilkington pyrolytic low-e coated glass, consider that polypropylene brushes usually have a lower coefficient of friction, and are softer, and more flexible than nylon. Note: the hardness of the pyrolytic Pilkington coating means that standard glass washing machine brushes can be used without need for the special soft material brushes typically used with the softer

sputtered low-e coatings. Brush height settings should be such that only the bristle tips, rather than the sides of the bristles, sweep the glass surface uniformly across the glass width.

Do not allow the glass to remain stationary under rotating brushes.

It is recommended that a test lite be run through the washer before starting production. The glass should be inspected, in transmission and in reflection, and with a bright spotlight close to the coated surface to determine if brush and/or air-drying adjustments are needed. If abrasive materials are trapped in washing equipment, abrasion damage to the glass and coating can occur.

Abrasive cleaners should only be used with great caution as they can often create relatively light or dark areas which are only visible under certain lighting conditions.

Hand Washing

The uncoated surface can be hand washed exactly as instructed in ATS #144 for plain glass. The low-emissivity coated side does have a very fine, hard texture which requires a slightly different cleaning procedure compared to that needed for plain, non-coated, glass. Cleaning details for the coated surface are given below.

Routine Cleaning

Hand cleaning a pyrolytic low emissivity coating, to visibly remove accumulated dust or fingerprints, can be accomplished by using a number of different cleaning products which are readily available from domestic supply, grocery and hardware stores.

Do not use razor blades, steel wool or other metallic objects on the coated surface. The hard coating would probably not be damaged but fine metal marks, looking like scratches in sunlight, could easily be left on the coating. Such marks would need special cleaning techniques to remove them – see “Specialized Cleaning” section below.

Follow the manufacturers recommended handling procedures for each product listed.

Recommended Routine Cleaning Products:

- “Sparkle Glass Cleaner”, clear liquid available from grocery stores, produced by A.J. Funk & Co., Elgin, IL. Contains 2-Butoxyethanol.
- “Windex® Advanced Glass & Multi-Surface”, blue liquid, by SC Johnson & Son, Inc., Racine, WI. Contains 2-Hexoxyethanol and Isopropyl Alcohol.
- “Hi-SHEEN”, aerosol spray Glass Cleaner by Sommer & Maca Industries Inc., Cicero, IL. Contains Diacetone Alcohol.
- “Windex® Multi-Surface Vinegar Cleaner”, clear liquid by SC Johnson. Contains: 2 Hexoxyethanol, Acetic Acid.
- Mixture of one-part clear vinegar with one to ten parts clean water.

Commercially available vinegar-based glass cleaners have generally demonstrated an ability to provide a clean, streak-free coated surface. Pilkington North America, Inc. does not recommend the use of ammonia or alcohol base glass cleaners because these products could leave faint (not permanent) streaks on the coating.

Typical Routine Cleaning Procedure for Pilkington Pyrolytic Coatings:

1. Flood the low emissivity coated surface with a spray-on cleaning solution or with a cloth saturated with the cleaning solution, to thoroughly wet the surface and remove any grit particles. Be generous with the amount of solution applied.
2. Rub the wetted surface with a clean, lint-free towel or cloth, to dissolve any dirt on the coating.
3. Wipe dry with a dry, clean, lint free towel or cloth. It is preferable not to use a squeegee on the low emissivity surface, simply to avoid the possibility of drag marks from the corners of a soft blade abrading against the hard coating.
4. To prevent streaking, stop wiping when the glass is almost dry and there is still a uniform, thin film of moisture left on the glass surface. This film will quickly evaporate leaving a clean surface. Note: streaking is simply the re-deposition of smears of non-uniform dirt, and detergent from the cleaning solution if there were too much dirt and too little volume of cleaning or rinsing solution.

Detailed Cleaning Procedure to Remove Large Amounts of Dirt:

1. If the coated surface is heavily contaminated with dirt, such as during installation on a construction site, use a water spray from a hose or garden spray pressure bottle to flush away insoluble particulate matter without risk of creating fine scratches.
2. Flood the low emissivity coated surface with a spray-on cleaning solution or with a cloth saturated with the cleaning solution. Be generous with the amount of solution applied.
3. Rub the wetted surface with a clean, lint free towel or cloth, to dissolve any dirt on the coating.
4. Wipe dry with a dry, clean, lint free towel or cloth. It is preferable not to use a squeegee on the low emissivity surface. To prevent streaking - stop wiping when the glass is almost dry and there is still a uniform thin film of moisture left on the glass surface. This film will quickly evaporate leaving a clean surface. Note: streaking is simply the re-deposition of smears of non-uniform dirt and detergent from the cleaning solution if there were too much dirt and too little volume of cleaning solution.
5. If, after the above procedure, and under critical viewing, the glass does not appear clean then a rinse with distilled water should be made after detergent washing - before the cleaning solution has had time to evaporate - to remove the dirt contaminated detergent solution. When properly done this allows the final evaporation of a thin film of pure, clean rinse water which cannot leave any visible deposits.

Spot Cleaning

Occasional spot cleaning may be required to remove stubborn dirt or foreign materials that have adhered to the low emissivity coated surface. Spot cleaning products containing organic solvents, or a one-time gentle hand application of very fine abrasives, can be used to remove markings from grease, oil, tape adhesive, and crayons or other waxy materials as well as paint and rub-off marks from plastics. Overly aggressive application of abrasives will rub a permanent bright spot into the coating.

Recommended Spot Cleaning Products:

- "Soft Scrub® with Bleach Cleanser", mild abrasive cleaner, Contains: Calcium Carbonate and Sodium Hypochlorite.
- "Bar Keepers Friend Liquid®", Contains: Oxalic Acid and fine abrasive powder.
- "Goof-Off", Contains Xylene and Ethyl Benzene.
- Denatured Alcohol, Methyl Ethyl Ketone, Acetone or other organic solvents available from hardware stores.

Spot Cleaning Procedure:

1. Use a cloth saturated with a routine cleaning solution to thoroughly wet the surface and to remove any grit particles.
2. Apply a small quantity of one of the cleaners listed above to a clean, wet cloth or towel.
3. Rub on areas of coating needing spot cleaning.
4. Take particular care to prevent solvents, such as those listed above, from contacting glass sealants, framing and adjacent paintwork.
5. Wipe clean using a dry, clean, lint free towel or cloth and immediately follow with the rinsing procedure given above in "Detailed Cleaning Procedure".

Specialized Cleaning

If metallic objects have contacted the coated surface, a thin layer of metal removed from the object may be deposited onto the coating which results in a discolored stain or mark that looks like a scratch. Such marks cannot be removed using the normal cleaning procedures given above but do require the specialized techniques below.

Recommended Specialized Cleaning Products for Removal of Metal Marks, etc.:

- "Lime-A-Way", Contains Sulfamic Acid, Isopropyl Alcohol and Hydroxyacetic Acid.
- Muriatic Acid, (available from hardware stores). 20% Hydrochloric acid solution in water.
- "Acid Magic™", Muriatic Acid Replacement (available from hardware stores), Contains: Hydrochloric Acid.

Specialized Cleaning Procedure:

1. Use a cloth saturated with a routine cleaning solution to thoroughly wet the surface and to remove any grit particles.
2. Apply a small quantity of one of the specialized cleaning products listed above to a wet, clean cloth or towel.
3. Rub only on the areas of glass needing cleaning. Do not allow splashing onto adjacent glazing frames, etc.
4. Wipe clean using a dry, clean, lint free towel or cloth. Follow with the rinsing procedure given above in "Detailed Cleaning Procedure".

Change Summary

Change	Date
Format Update	09/15/2026

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