



# Glass Cleaning & Maintenance

## General Guidelines

### CLEANING AND MAINTENANCE

For routine cleaning of any glass type, a mild soap mix is recommended. Evenly spray the cleaning mix, wipe it uniformly and then dry it with a soft smooth cloth or a squeegee.

Do not allow any metal or hard matter of the cleaning equipment contact the glass surfaces.

Once you have cleaned the glass surface and removed the dirt or stain on it, stop at that point, and do not use a stronger mix.

Regular cleaning and maintenance will help to conserve the glass brilliance, maximize heat-reflecting properties and provide greater, long-term value.

### STAIN PREVENTION

Glass is uniquely resistant to chemical attacks and other types of deterioration that could occur during construction. Nevertheless, glass can react and stain when the acids, normally used to clean new concrete and masonry runoff, are spilled on the glass surface. In addition a prolonged contact with water during storage and shipment will also cause glass staining. Water may come from a leaking pipe or roof when the glass is stored inside, and from rain, snow or other sources when stored outside.

Condensation of water vapor on the glass can also cause glass staining and etching when glass is stored outside or in an unheated warehouse. Condensation occurs when the glass temperature reaches the dew point. This is a common situation in places where the temperature is cold or in a high humidity level in the environment. When the glass is stacked together, as it usually is inside the crates, the water vapor will get trapped making it difficult to evaporate. After a few days with this cycle, the glass will eventually stain. Please note that glass temperature changes slower than the air temperature, because of its bulk, and the temperature lag of the glass. While the crates offer great protection to glass, the protective foam layer between each lite may trap moisture. Therefore, Cristacurva recommends not keeping the glass inside crates for more than 4 weeks, and even less time in humid environments.

During construction, it is complicated to prevent the glass from getting dirty by alkaline materials. If this happens, the glass needs to be cleaned and washed within the next couple of days to prevent replacing the unit in the future.

To prevent glass staining it is necessary to avoid the situations described above.

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## GLASS CLEANERS AND STAIN REMOVAL

To remove different types of stains it is recommended to use a commercial glass cleaner. Often the most commercial solution will remove stains, such as fingerprints, oil, and food residues. To remove paint and other hard to remove stains, please refer to your nearest hardware store and ask about the best solution for such stain removal. The following list of glass cleaners may be used to clean the glass surface. The list begins with the mildest and continues with the strongest. Once you find a cleaning solution that removes surface contaminants, stop at that level and do not use a stronger solution:

1. A mild soap and water solution
2. Commercial glass cleaner
3. A mild Isopropyl Alcohol (IPA) and Water solution
4. Soft Scrub® nonabrasive cleanser
5. Cerium Oxide and Water

When cleaning the glass with soap and water or a commercial cleaner, spray a solution on top of the glass. Wipe the excess away with a paper towel. Rinse the glass with clean water and remove any excess water from the surface with a squeegee or a clean lint-free cloth.

In case the stains do not come off, we recommend the use of Clean X Sani-Scrub Mild Abrasive Cleanser from Unelko Industries in Scottsdale, AZ. Another strong cleaning method would be to use Cerium Oxide and Water. For these two products, please follow the next instructions:

1. Apply water on the surface to be clean.
2. Pour some Sani-Scrub on top of the water.
3. Rub in circles with a soft kitchen white polyester pad made by Scotch Brite (3M) 100% Polyester, or a lint-free cloth, or similar.
4. Please remember that these are abrasive materials and could scratch the glass if great pressure is used or little amount of water.
5. After rubbing enough times to watch the stain fade, rinse with water and dry with a squeegee or a clean lint-free cloth.

Do not clean glass under direct sunlight conditions. To properly clean, start at the top of the building, systematically working downward, this reduces the risk of residue, and other damaging substances from spilling on the glass on the lower levels.

Before cleaning please make sure that the technique to be used does not scratch the glass by running a small test. Cristacurva will not be held liable for any scratches created by any type of cleaning practices, whether they are professional or amateur, certified or non-certified.

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## CLEANING & MAINTENANCE OF ETCHED PRODUCTS

### CurvaFrost (Acid Etched) & Creanza® Frost (Automated Sandblasted)

CurvaFrost and Creanza® Frost glass products have a decorative etched finish that must be handled with great care or the etched finished will be affected by mishandling, improper storing and improper cleaning.

While handling Creanza® Frost products, they must be handled only with clean gloves, preferable with glass gloves or lint free inspection gloves. Please do not use the following items on an etched surface:

- Buttons
- Suction Cups
- Tape
- Adhesives/Silicones
- Scrapers
- Sharp Tools/Instruments
- Dirty Hands

Glass must be stored properly. Please store in a dry controlled environment. It is imperative to prevent material from getting wet and any exposure to moisture, condensation, drastic temperature changes, or similar. These conditions will damage the etched glass surfaces in a way that may not be cleaned or removed. While the Creanza® Frost surface has been properly sealed with a clear sealant to protective the finish, the above will have an irreversible effect on the product.

CurvaFrost and Creanza® Frost glass products are susceptible to staining when left for long periods of time in places where the environment is not clean or in an uncontrolled environment. Stains from building materials are difficult to clean if they are not washed away in very short periods of time. This is typical when the glass is installed and the job is not completed yet with people working in the area. It is important to clean the glass upon handling and once it is installed in order to protect its surface. For CurvaFrost products, once stained, depending on the type, it can be cleaned using lemon juice (citric acid) or vinegar (acetic acid). Since these are products with low levels of abrasion, they can be directly applied on the glass.

#### **When cleaning the CurvaFrost (Acid Etched) glass, please follow the next instructions:**

1. Spray a solution with a base of water and Windex. If dealing with a stain or mark, you may start with Magic Eraser prior to spraying this solution. Wipe the excess away in a circular motion with a lint free towel or cloth. Lint free is preferred or else you may have particles and lint that remain over the etched finish. As you wipe, the solution will begin to evaporate. When cleaning, the entire surface must be cleaned

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- to achieve a uniform appearance. If not, you may have a swirling appearance with spot cleaning applications.
2. If trying to remove fingerprints or staining, the cleaning solution will be a solution mixture of isopropyl alcohol and Windex. Do not use denatured alcohol as it contains oil content.
  3. Stubborn markings may require utilizing Magic Eraser or a fine white steel pad over the area first, applying in a circular motion, and then follow with the isopropyl alcohol and Windex mixture.
  4. Any adhesive marking may require Silicone and Adhesive Remover first, applying with Magic Eraser or fine white steel pad in a circular motion and then follow with the isopropyl alcohol and Windex mixture. See Photo 3 below for the product.

If the stain remains there is another more corrosive or abrasive acid types that can be used such as sulfuric, nitric, and hydrochloric or hydrofluoric acid. We typically use hydrofluoric acid to clean it in a mild acid and water solution. If a larger proportion of acid is needed to clean the stains, please add more, glass will not be damaged, however try first a small area to make sure you can handle the operation. Acids are aggressive solutions and may cause damage to humans, therefore, they will be used under the customer's own risk.

Make sure to follow the next steps when using acids:

1. Wear Latex Gloves, breathing mask and safety goggles all the time while handling this acid glass cleaner
2. Apply directly on the glass surface with a damp cloth (previously moistened with the acid)
3. Apply it gently in a horizontal way and distribute uniformly over the spot to remove
4. Let it rest for 1 minute on the stained surface
5. Rinse thoroughly with water and dry with a towel of cotton cloth
6. Acid should not have direct contact with clear float glass as it may leave a stain that might etch glass

**When cleaning the Creanza® Frost (Automated Sandblasted) glass, please follow the next instructions:**

1. Spray a solution with a base of water and Windex. Cover the entire surface with the mixed solution.
2. Wipe the excess away in a circular motion with a lint free towel or cloth. Lint free is preferred or else you may have particles and lint that remain over the etched finish. As you wipe, the solution will begin to evaporate. When cleaning, the entire surface must be cleaned to achieve a uniform appearance. If not, you may have a swirling appearance with spot cleaning applications.
3. If trying to remove fingerprints or staining, the cleaning solution will be a solution mixture of isopropyl alcohol and Windex. Do not use denatured alcohol as it contains oil content.

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4. Stubborn markings may require utilizing Magic Eraser or a fine white steel pad over the area first, applying in a circular motion, and then follow with the isopropyl alcohol and Windex mixture.
5. Any adhesive marking may require Silicone and Adhesive Remover first, applying with Magic Eraser or fine white steel pad in a circular motion and then follow with the isopropyl alcohol and Windex mixture. See Photo 3 below for the product.

## CLEANING & MAINTENANCE OF Traxxion Glass (Anti-Skid Ceramic Frit)

Traxxion Glass has a rough surface with raised particles on the surface of the glass that are highly abrasive.

**When cleaning Traxxion Glass (Anti-Skid Ceramic Frit), please follow the next instructions:**

1. Spray a solution with a base of water and Windex. Cover the entire surface with the mixed solution.
2. Wipe the excess away with a paper towel. When drying the surface with a paper towel do not wipe, just let the towel absorb the excess of liquid. This will prevent the particles of the paper towel from getting stuck in the rough surface (abrasive frit).
3. Take a dry, medium, hard bristle brush and clean the surface removing any paper particles or residue that might have adhered to the abrasive frit. Blowing air on the glass will help remove the loose particles.
4. Stubborn markings may require utilizing Clean X Sani-Scrub Mild Abrasive Cleanser from Unelko Industries. Use this paste following the instructions attached to the label in the bottle.

## CLEANING EXCESS SILICONE FROM INSULATED GLASS UNITS

To clean excess silicone from IGUs, please follow the next steps:

1. Do not use an actual razor-blade on the surface of any unit, for any reason. If a razor blade is "necessary", use one made out of plastic (as shown in photo 1). These should be used to remove the majority of the silicone attached to the surface.

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Photo 1. Plastic Razor-Blade

2. Any “residual” silicone such as light smearing or minute amounts left behind from wiping, (as shown in photo 2) can be easily removed with a silicone/adhesive remover. “Re-mov” is a product which we recommend for this application (see photo 3). This should be used to remove silicone spots such as those depicted in photos 2 and 4 instead of methods which require more pressure or mechanical force.



Photo 2. Light Smears

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Photo 3. Silicone and Adhesive Remover ("Re-Mov")



Photo 4. Excess material on a viewing surface

3. Silicone protruding from an edge as shown in photo 5 can be removed in the quickest and most efficient manner possible, as long as the method does not subject the unit to excessive mechanical force. A metal razor blade should work, as long as it is never used on the glass surface.

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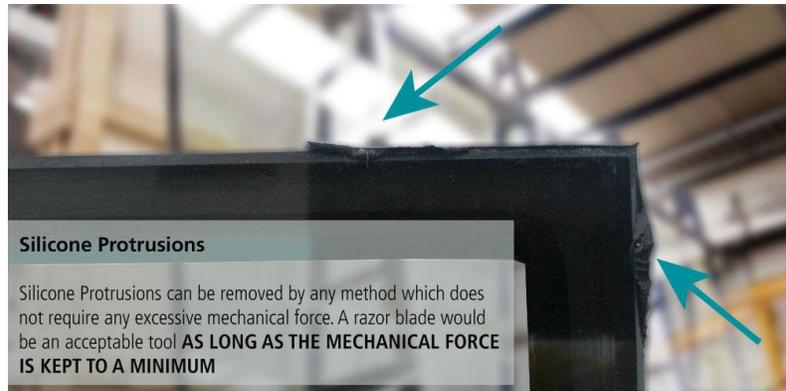


Photo 5. Silicone Protrusions

You can get products that meet what we described above in our Glazing Retail Store or use the specifications that are listed below:

[glaziers@cristacurva.com](mailto:glaziers@cristacurva.com)

Direct (713) 353-5802

eFax (281) 656-4507

## SPECIAL HANDLING PROCESSES: SCRATCH REMOVAL

Over time exposed portions of a unit can begin to accumulate scratches. Certain types of buffing practices have been proven to remove certain types of scratches, however not all scratches can be removed. While buffing will remove these scratches and should not compromise the units, any adverse effects from buffing such as breakage of the unit or additional distortion created, will not be the manufacturer's responsibility.

Cristacurva will not be held liable for any damage including scratches, rubs, stains, abrasion, or other, created by any type of cleaning practices performed by the customer or any contracted cleaning company, whether they are professionals or amateurs, certified or non-certified, after the product has been received. The customer must not sandblast or acid wash any type of processed glass; this will cause it to break. Processed glass includes laminated, curved annealed, curved and flat tempered or heat strengthened glass.

For any additional questions, please contact our Customer Service Team at 1.866.229.3750.

The information provided in this document is presented in good faith, using industry knowledge and experience. It is believed to be accurate and its use will not create any liability on Cristacurva.

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## OTHER SPECIAL PRODUCTS CLEANING AND MAINTENANCE TECHNIQUES: Exposed hard coated Low Es

### Energy Advantage™

The following are cleaning and maintenance instructions to follow when cleaning **Energy Advantage™** Low E products from Pilkington. The information listed below was extracted and pasted onto this Cristacurva document from Pilkington's technical manuals.

#### COATING DURABILITY

As the coating on the 4th surface is exposed on the room side of the window, its durability is critical. Pyrolytic coatings are very durable and difficult to damage. Pilkington products have a track record of use in these types of application through many installations in Australia of residential, single glazed, patio doors with a solar control layer under the same top surface low-e coating. This application has now proven to be successful for more than 10 years installed life. Recent improvements in the haze levels of the Pilkington **Energy Advantage™** coating, as detailed above have resulted in improved coating smoothness. In fact, the coating has been in use for many years in the North American market as a 4th surface Low-E product.

Pilkington **Energy Advantage™** has been successfully tested to the European EN 1096-2 standard for exposed coatings. This standard includes sections on resistance to abrasion, acid rain, condensation and salt spray cycling, illustrating the durability of the coating.

#### MAINTENANCE & CLEANING

Although the coating itself is resistant to most chemicals, the nature of the coating surface makes cleaning operations slightly different compared to those for uncoated glass. Do not use razor blades, steel wool or other metallic objects on the coated surface. This would not damage the coating 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 and these are described later in this document.

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. Follow the manufacturer's 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.

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- “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 purely alcohol based glass cleaners because these products could leave faint (not permanent) streaks on the coating.

## **Routine Cleaning Procedure for Pilkington Energy Advantage™:**

1. Flood the 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 fully 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 was 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 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 fully 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.

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**NOTE:** Streaking is simply the re-deposition of smears of non-uniform dirt and detergent from the cleaning solution if there was 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.
6. 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 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.

### Recommended Spot Cleaning Products:

- "Soft Scrub with Bleach Cleanser", mild abrasive cleaner, produced by The Clorox Co., Oakland, CA. Contains: Calcium Carbonate and Sodium Hypochlorite.
- "Bar Keepers Friend Liquid", produced by Servaas Laboratories, Indianapolis, IN. Contains: Oxalic Acid and fine abrasive powder.
- "Goof-Off" from Valspar Corp., Wheeling, IL and Lilly Industries Inc., Grand Rapids, MI 49512. 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

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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", by Reckitt Benckiser Inc. 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), produced by Universal Chemicals & Supplies Inc., Div. of Certol International LLC, 6120 E. 58th. Ave., Commerce City, CO. Tel 800 843 3343. 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".

### OptiView™

The following are cleaning and maintenance instructions to follow when cleaning **OptiView™** Low E products from Pilkington. The information listed below was extracted and pasted onto this Cristacurva document from Pilkington's technical manuals.

#### MAINTENANCE AND CLEANING

Pilkington OptiView™ can be cleaned and maintained by hand washing with non-abrasive, ordinary domestic glass cleaning solutions, or a mild detergent and water solution.

#### Recommended Routine Cleaning Products

- BioRenewables®" Glass Cleaner #3835
- Green Solutions®" Glass Cleaner #3507

#### Routine Cleaning Procedure for Hand Washing Pilkington OptiView™:

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1. First rinse loose dirt abrasive dirt from the glass with a low pressure water hose. Do not dry-wipe dirt from the surface as scratching may occur.
2. Uniformly apply the detergent solution to the glass and wash with a clean, soft cloth, sponge, or pad, rotating the pad to continually expose a fresh clean surface.
3. Rinse thoroughly with clean water and wipe or squeegee dry immediately to remove all traces of dirt and detergent. Detergent drops left to dry on the anti-reflective coating will typically be more visible than on non-coated glass.
4. Make sure no metal parts of the cleaning equipment touch the anti-reflective glass surface, and that no abrasive particles are trapped between the glass and the cleaning materials.

**NOTE:** Stubborn stains can be removed with organic solvents such as mineral spirits, de-natured alcohol, acetone, or MEK, following appropriate safety procedures and preventing the solvents from contacting adjacent paintwork, etc. The solvent wash should be followed immediately by a detergent wash and a clean water rinse to remove solvent and dirt residues.

**\*Do not use harsh chemical cleaners, abrasives, opaque liquid cleaning solutions such as Soft Scrub® by Clorox, steel wool, or razor blades on the anti-reflective surface.**

## Spot Cleaning

Occasionally spot cleaning may be required to remove stubborn dirt or foreign materials that can adhere to the anti-reflective coated surface. Spot cleaning products work to remove paint or markings from grease, oil, tape adhesive, and crayons or other waxy materials as well as rub marks from plastics.

### Recommended Spot Cleaning Products:

- Denatured Alcohol, Acetone or "Goof-Off" (organic solvents available at hardware stores)

### Spot Cleaning Procedure:

1. Apply a small quantity of one of the cleaners listed above to a clean, dry cloth or towel.
2. Rub on areas of glass needing spot cleaning.
3. Wipe the glass clean using dry, clean, lint free towel or cloth and follow with the routine cleaning procedure given above.

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Do not contact the coated surface with razor blades, steel wool or other metallic objects. If metallic objects lightly contact the coated surface, a thin layer of metal from the object may be deposited onto the coating resulting in a discolored stain (looking like a scratch) which would be difficult to remove using normal cleaning procedures.

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

- Muriatic Acid (available from hardware store).
- Ultra-Safe Acid □ Muriatic Acid Replacement (available from hardware store), produced by Bio-Safe Industries, Inc., Englewood CO
- Steel Glo® (available from grocery store) produced by Steel Glo® Products, Kansas City MO.

#### **Specialized Cleaning Procedure:**

1. Apply a small quantity of one of the specialized cleaning products listed above to a clean cloth, towel or "Q-tip" while following appropriate safety procedures.
2. Rub on areas of glass needing cleaning.
3. Wipe clean using a dry, clean, lint free towel or cloth followed by the routine cleaning procedure.
4. If the glass is cleaned on a regular basis, and not exposed to abuse, there should be no need for specialized washing techniques.

For any additional questions, please contact our Customer Service Team at **1.866.229.3750**.

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