The Auto Tint Manual

BEKAERT

BEKAERT SPECIALTY FILMS

The Auto Tint Manual

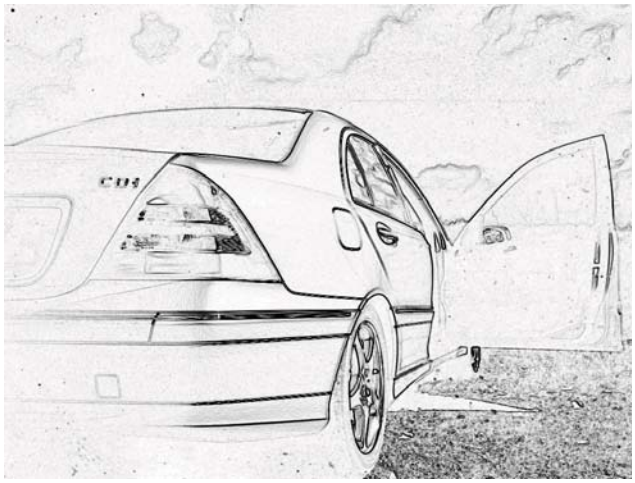
Background Of Auto Window Films

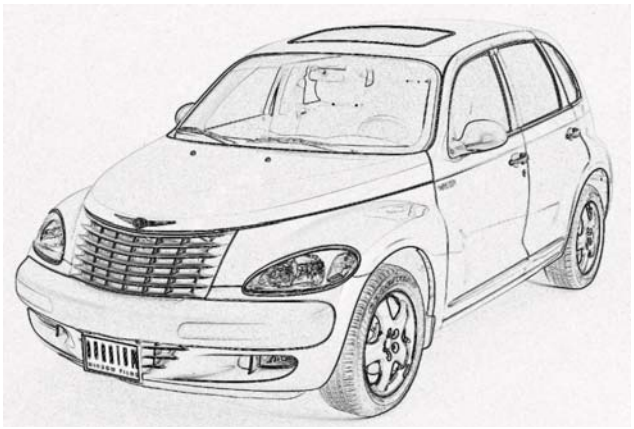
A Brief summary of the history of automotive films

A Brief History
Of Automotive Films

Automotive window tinting has been around for many years, through this period of time both installation techniques and film quality has changed for the better.

In the early years automotive enthusiasts started using the highly reflective window films on cars, these were the same type of films generally used on buildings. Manufacturers quickly saw the potential in the automotive market and started to develop films suited to automotive application. The first auto films were dyed non reflective films, these films offered limited performance in heat and glare rejection, however this was not an issue at that time as the market was appearance driven rather than functional.





The appearance factor was the driving force in the market for many years but for the market to grow it became increasingly obvious that automotive films would need to offer more than just good looks. This was put right by the introduction of high perfomance films, these films contained a metallised layer for added heat rejection. The first high performance films were basically constructed of a dyed film laminated to a aluminium metallised film, this construction helped reduce heat while still offering the same aesthetic appeal.

Today, the new auto films are made using a variety of different metals. These newer constructions keep out a considerable amount of heat while maintaining the appearance that the customer demands. These new films do not have to be dark to reject heat and this has become increasingly important as the market moves from the more appearance driven consumer to the more functional driven customer.

And as we move into the twenty first century with tecnology growing on a daily basis the next generation of auto films could be just around the corner. From small beginnings the automotive window film market has grown into a multi million dollar business, and for all this growth there are still more cars without window film than there are cars with film.

General Benefits Of Automotive Films

There are many reasons why people choose to have Solar Gard automotive films installed on their vehicle. Some of the benefits of installing window film are :

- improves the appearance of your car
- optically clear
- reduces heat gain
- removes annoying glare and headlight dazzle
- protects against harmful uv rays, both you and the interior
- helps reduce the usage of air conditioning and may save on fuel consumption as a result
- increases privacy
- can help hold glass fragments together if panel is smashed, reducing possible injury and damage to the interior
- improves visual security
- reduces glare and helps enhances in-car video screens
- helps maintain market value of your vehicle
- visual privacy for rear passengers, ideal for VIP's, MP's and media personalities
- enhances colour of the glass
- scratch resistant coatings allow easy maintenance
- excellent warranty

With all these benefits it is easy to see why many people choose to have Solar Gard automotive films installed on their vehicle. Solar Gard window film can be installed with the minimum of disruption to the customer, with most installations being done in less than a day you could be experiencing the benefits of window film in no time at all.

When you have Solar Gard window film installed you can have peace of mind as all Solar Gard window films come with one of the stongest factory backed warranties in the industry.

And with a network of professional dealers and installers around the world your nearest Solar Gard dealer is never too far away, so give you car that touch of distinction and have Solar Gard window film installed today.

Safety Films For Automotive Applications

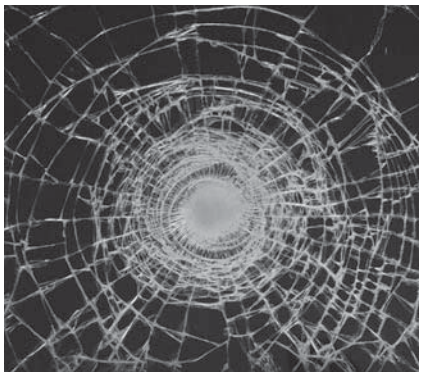
With car related crimes increasing it is becoming an unfortuante necessity to think of new ways of prevention. From theft to vandalism and now car jacking our vehicles are more at risk than ever before, hi tech alarm systems provide superb security and immobilisers offer some peace of mind from theft. However these systems can offer little protection form opportunist crime such as smash & grab thieves and car jacking.

Glass is the one weak link in vehicles today and can offer little resistance to oppurtunist criminals. Safety & security films from Bekaert Specialty Films can help give you increased peace of mind by making your vehicle more difficult to break in to. By installing a safety & security film you can stop smash and grab thieves and reduce to the risk of car jacking.

These films work by holding the glass together in impact situations, while the film cannot totally stop the most determined thief, it can however greatly reduce the risk of these opportunist crimes. In addition to the added security, these films also offer a greater safety aspect than ordinary films. With glass shards being held in place in the event of an impact, the risk of injury due to flying glass shards is greatly reduced

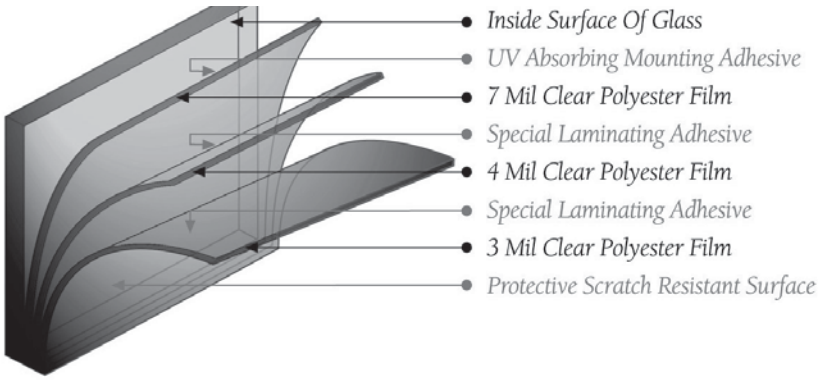
Armorgard films are available from 4 mil (100 micron) to 14 mil (350 micron) thick, in both clear and some solar-safety combination versions. Different situations need different types of film. All safety and security films help reduce fading by removing at least 98% of harmful UV rays too.

The Armorcoat range has passed the impact requirements of British Standards and the new European CEN12600 Standards. Furthermore some meet GSA/ISC safety criteria for bomb blast, Level C.



Armorcoat film after impact, glass shards are held in place

Armorcoat Film Construction - 14 Mil Clear



Automotive Tinting
Setting Up Your Workshop

The following guidelines are provided by the IWFA (International Window Film Association) and are found in their Automotive Education Guide (2002).

ENVIRONMENT

Many people choose to operate their business out of their homes, using their garage as their shop area (as long as they are legally allowed to do so.) Others prefer to go mobile and service the car dealers at their locations). Others have a regular place of business and either specialize in window tinting or offer it as an accessory item along with other auto-related services such as auto detailing, sunroof installation, and many other after market products available to car-conscious consumers. Regardless of which type of shop environment you choose, two key factors will always apply: your shop environment or workspace and the right tools and supplies.

YOUR SHOP OR WORKSPACE

No matter where you install automotive tint, the right environment is a must in any installation. An area that is clean of dust and dirt is essential in automotive window tinting. Dirt must be controlled at all times. Depending upon the installation site, control of open areas (doors and windows) must be reduced to insure a clean installation. Air-born dust, especially from other aftennarket installation, can ruin an otherwise clean installation. When applicable, air filters in air conditioning and heating systems should be considered. Even applying air filters on small box fans can reduce air particles in the air, thus helping to insure a cleaner installation.

LIGHTING

Good overhead lighting is essential in the installation of automotive window film. As window tinting demands thorough cleaning of the windows as well as the precise cutting of the window film itself, good overhead lighting will provide the required visibility. Besides overhead lighting, additional side lighting from four to eight feet off the ground will provide added visibility while cutting darker windows and/or films. In additional to overhead and side lighting, most shops should also include one or more portable fluorescent work lights to aid in the viewing and cutting of the window films.

One important aspect of your workspace that should also be considered is the color of your walls. It is generally believed that lightly colored or white walls are preferred in the installation of window film. The lighter the walls, the more light that is reflected which results in better viewing of the installed film.

FLOORS

While you may not always be able to control the color of your workspace floors, a painted floor gives a more professional appearance to your shop or workspace area. You should strive to keep the floor area as clean as possible as a clean floor will help to reduce dust and airborne contaminates.

Continued...

Automotive Tinting
Setting Up Your Workshop

By keeping your floor clean, you also will reduce the risk of tracking dirt, grease, oil, etc, in your customer's vehicle.

Another aspect to consider is a non-skid floor surface. Your floor may be wet due to the use of water and water solutions in the installation of window film. A non-skid surface adds an element of safety to prevent falls on slippery, wet floors.

STORAGE AREA

Film storage shelves are a key factor in keeping track of inventory. A clean storage area will allow for quick location of the correct roll not only by width but also by type of film as well. Besides storing various types of film and roll sizes, a clean storage area can also be used to store various tools needed for proper installation.

CUTTING SURFACES

While everyone agrees that cutting surfaces are an important element to aid installers, the manner of surface you choose will depend upon your personal preference. The main use of a cutting surface is to enable the installer to trim the rough cut film as well as aid in the removal of the film release liner during the installation process.

The most popular types of cutting surfaces are made of glass. This piece of glass may be attached to a standard horizontal surface, to a movable frame, or mounted to a wall. Depending upon your shop layout, the placement of the cutting surface should allow the installer to have the window film as close to the window being tinted as possible. The closer the cutting surface is to the window, the lesser the chance of getting airborne contaminants (dirt) on the film after the release liner has been pulled.

WATER

Water is an essential part of the tinting process. An adequate water supply should be available both for the tinting of vehicles as well as general shop clean up. Although distilled water is generally the best type to use, it may not always be practical. To be safe, you should refer to the manufacturer's recommendations as to requirements for water and/or surfactant (soap or detergent) for cleaning, installation, and cleanup. A failure to follow the manufacturer's recommendations could result in future problems concerning any war- ranty coverage for your installations.

Information provided by the IWFA (International Window Film Association) and found in their Automotive Education Guide (2002).

Automotive Tinting Installation Guidelines

The following information is a guide only and intended to be used as a point of reference following the Auto Tint Training course.

Side Window Installation

1. Clean all surfaces that the film will touch
2. Examine the type of weather strip (is it rubber of felt) and how it relates to the exterior of the window
3. Examine the bottom weather strip and how it relates to the exterior weather strip, is it lower, higher or the same height?
4. Measure the length of the window; make sure that you get the longest distance, ie. From the lower left to the upper right corner
5. Roll out the required length of film with the release liner down. Spray the film with water and roll out another piece of film with the release liner up. Put two pieces together and squeegee the water out from between the two pieces. Now the two pieces act as one.
6. Spray the outside of the window with water and place the film on the window leaving about 12-15mm overlap at the bottom. Squeegee across the middle of the window to make the film stick to the glass.
7. Cut the film on the longest side starting about 50mm from the top. Be sure that the film is flat across the frame, holding the blade at 90° to the window will cut the film to the exact size, adjust the angle to cut either over or under size.
8. If the front or shorter side is accessible cut it in the same way, if not, find two points which follow the angle of the front edge of the glass and mark the film
9. Roll down the window to expose the top edge of the glass. Be sure to pull the bottom edge of the film out so it will not get caught in the window
10. Squeegee the top portion of film flat against the glass. Cut the top of the film along the top edge of the glass. Use a short blade tip pushing the holder of the knife tight against the glass to make sure it follows the exact edge of the glass.
11. Remove the film from the window and lay it on a flat piece of glass, using a straight edge to finish the shape of the window. On the forward portion of the film just line up the straight edge with the two points which were placed in the film previously

Cleaning The Glass

1. If the windows have a felt weather strip, mask it with tape
2. Spray the window with a mild soap and water solution

Continued...

Cleaning The Glass

3. Examine the bottom weather strip and how it relates to the exterior weather strip, is it lower, higher or the same height?
4. Measure the length of the window; make sure that you get the longest distance, ie. From the lower left to the upper right corner
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Applying The Film

Separate the two pieces of film previously put back-to-back for cutting.

1. Remove the release liner from the film; spray a mild soap and water solution on to the inside of the window and to the adhesive side of the film. Carefully apply the top of the film to the top edge of the glass being sure to get the sides of the film on the glass first and then slide out to the edge of the glass. Squeegee the top edge of the window.
2. If the door panel has felt window trim, remove the release liner from the top edge of the film and peel down about ¼ of the template. With the release liner still on the rest of the film, apply the film to the window as in stage 1 above.

Continued...

Applying The Film

3. Once the film is adhered to the glass, carefully roll the window up whilst pressing the window out to prevent the film from peeling.
4. Hold the lower section of the film away from the glass and spray the soap and water solution on to the window to wash the window down and clean any debris that may have rolled up with the window.
5. Take the bottom edge of the film template and place it flat across the bottom edge of the window
6. Using a gasket hook or gasket jammer, pull the lower weather shield away from the glass and slide the film down.
7. Starting from the centre and working out to each edge, squeegee the water out from between the film and the glass.
8. Using a paper towel wrapped around a squeegee, soak up the water from around the edge of the window and film.

Front Side Windows Unframed

1. Place the film on the outside edge of the window leaving enough at the bottom for it to fit behind the weather strip and cut the film to the profile of the window.

Rear Side Window

2. Roll the windows up and down to see how the glass rolls up into the window frame
3. Adjust the way the film is cut to be sure that it will cover all the glass when it is rolled up and down
4. Follow the same procedure as outlined for the front windows above

Triangle Quarter Windows

1. Place the film on the exterior of the window and squeegee to make the film stick to the glass
2. Using a new sharp stainless steel knife blade trim the curved portion of the window and the bottom section, leave the film overlapping on the straight edge of the window
3. From the inside look to see if the window has a rubber weather strip around it or a black border. If it has a black border simply place the film on the glass and trim the straight side after cleaning the window.
4. If the window has rubber weather strips take a knife and trim about 3mm of rubber completely around the window. This prevents small pieces of rubber from getting under the film when cutting and gives a small indentation to prevent any light gaps.

Continued...

Triangle Quarter Windows

5. Clean the window and install the film fitting the rounded side of the film into the groove created when the rubber was trimmed. Squeegee the film and trim the straight side of the window.
6. Finish installing the film.

Van Windows Fixed Sides

1. Trim the film to the shape of the window from the outside of the vehicle.
2. If the window has a border around it simply clean the window and install the film.
3. If the window has a rubber weather-strip, use the same technique as with the quarter window and install the film.

Van Windows Pop Out

1. Place the film on the exterior and mark the centre of each of the hardware hinges the glass is attached to.
2. Take the film off the window and place it on a flat surface. Take the aluminium triangle with the different size holes and find the right size hole that fits the hinge hardware. Use that hole and centre it over the marks made in the film. Cut the holes out.
3. Place the film back on the exterior of the window, lining up the hardware with the hole. Finish cutting the film and install.
4. If removal of the window is preferred, be sure to trim away any film from under the rubber washers since this will cause the film to bubble.

Rear Window Installation Two Piece

1. Place the film on the exterior of the window
2. Starting with the middle of the window cut the film about 12-15mm above the middle defroster line. Continue cutting each side of the film so there are two pieces of film. A top section and a bottom.
3. Pull the top piece down about 25mm so that it overlaps the bottom piece of film and the two pieces overlap the middle defroster line.
4. Trim the bottom piece and the top piece to the shape of the window. Be sure to include the dot matrix along the edge of the glass.

Continued...

Rear Window Installation
Two Piece

5. Install the top piece of film. Place relief cuts on the sides to eliminate excess film. (To ensure that the relief cuts do not show any white lines from the exterior, always cut along the defroster on the opposite side of the defroster from where the finger bubble occurs. The best way to remember this is the sequence, finger bubble-defrost-cut).
6. Install the bottom piece of film. Squeegee the overlapped section of the two pieces very lightly, just enough to get the material to lay flat.
7. Cut along the defroster line where the top and bottom pieces of film overlap. Be sure to cut all the way through the two pieces. Pull the excess material away spraying water as it is done.
8. Squeegee the two pieces together.
9. Place relief cuts on the sides of the bottom piece to eliminate excess film.

Rear Window Installation
Heat Shrink Techniques
Circling dry technique

1. Clean the rear window and dry with talcum powder. Only use enough powder to dry the back window. Do not use more than enough to dry the window.
2. Place a line of water across the centre of the back window. Use only enough to wet the window. If the water flows down the window it is too much water.
3. Please the film on the rear window. Be sure that the factory cut edge is on the top and bottom of the glass. Heat shrink is only done in an up and down direction.
4. Using a heat gun start to mould the film to the shape of the glass using a circular motion with the heat gun set on high. Be sure to lightly pull the film in a vertical direction.
5. Once the film is close to the shape of the glass, spray water underneath and continue to shrink the film to get a closer form to the exact contour of the glass.
6. Once the exact contour of the glass is made, trim the film.
7. Clean the rear window and install the film.
8. This technique is best for beginners and for extremely curved glass.

Rear Window Installation
Heat Shrink Techniques
Plastic squeegee technique

1. Take a plastic squeegee and wrap a paper towel around the front edge, be sure that it is smooth and tight.
2. Follow the same procedure as above except when the film is places across the glass use the plastic squeegee and towel to form the film into vertical finger bubbles.

Continued...

Rear Window Installation

Heat Shrink Techniques

Plastic squeegee technique

3. Heat the finger bubbles using the circular technique and use the plastic squeegee to push the film down. Push a little of the water from the centre of the window to get the film to stick to the glass as you push the fingers down with the squeegee.
4. Once all the fingers are pushed down the film should be formed to the shape and contour of the glass.
5. This procedure is best used by experienced installers and on windows that are not too curved.

Removing Old Film - New Installation

1. Pull the film off the glass. The adhesive will most likely still be on the glass
2. Spray the adhesive with film remover solution.
3. Place the removed layer of film back on the window and lightly squeegee the film.
4. Let it stand for 20 minutes.
5. Squeegee once more and then pull the film off. Most of the adhesive should come off with the film. Any adhesive left on the glass should be soft and easily removed using soap and water solution with a scotch pad or steel wool.

Removing Old Film - Old Installation

1. If the film has bee on for less than 3-4 years and it does not exhibit numerous air bubbles then it should be fairly easy to remove.
2. If the film has been on for more than 4 years and exhibits many air bubbles, it may be more difficult to remove.
3. Either way the rear window defroster may not be saved.
4. Place the vehicle in hot sun or under heat lamps.
5. Spray the film with film remover and cover with a release liner or plastic sheet.
6. Let it stand in the heat for 15-30 minutes.
7. Start to remove the film. CAUTION: Do not remove the film one layer at a time, try to remove both layers at the same time.
8. Repeat the process if the film did not remove. Older installations will require repeat soakings with film remover.
9. If small pieces of film are still adhered to the glass these can be removed by using a heat gun.

Automotive Installation
Clean Up & Care

Before returning the vehicle to the customer, it is best to return it to them as you received it.

Take time to be sure any rear decks, stereo covers, etc, that needed to be removed have been re-installed. Double cheek that all the interior surfaces of the vehicle have been wiped clean and dry. Make sure that no tools (especially razor blades) have been left in the vehicle.

Wipe down the outside of all windows that have been tinted.

Let your customer appreciate the installation of their window film. Remember to talk with your customer on any special instructions such as cleaning, waiting period to roll windows up and down, etc.

Automotive Installation
Practice Makes Perfect

Expenence is the key factor of window tinting. The more windows you tint, the better a window tinter you will become. There is no substitute for continued hands-on experience. Seminars, publications and technical manuals, such as this may make window tinting look relatively easy, but the basic steps in the tinting process can only he mastered over tiime. Keep in mind that car models change every year. With each new model year come new challenges to master. With time and patience, valuable experience is priceless.

Do's & Dont's
Of Auto Tinting
Cleaning Windows

- Use single edged razor blade to scrape and clean windows
- Do not use old or rusted blades
- Do not use razor blades on rear windows with demister elements
- Do not use razorblades on factory solar glass as this will scratch the surface
- Use soft scotch pads on rear windows with demisters
- You may also use medium grade steel wool on rear windows with demisters, but only with caution
- Do not use steel wool on factory solar glass as this will scratch the surface
- After cleaning th windows, squeegee all water of the the glass and wipe down edges with a paper towel wrapped around the point of a squeegee
- Do not allow the squeegee or the paper towel to touch any felt around the window frame
- Use the point of a squeegee and a paper towel to clean the corners and edges of the windows with rubber weather strip
- Use a hairspray on the felt of the window strips with the windows down to hold the felt fibres in position and from getting under the window film
- Wash and wipe down the outside of the windows before cutting the film

Do's & Dont's
Of Auto Tinting
Cutting Film For Side Windows

- Pre-cut the film on the outside of the glass
- Use Stainless Steel snap-off blades to cut the film. (Non Stainless steel blades may scratch the glass
- Always use new blade tips, they cut easier and reduce the risk of scratching the glass
- Do not hold the knife at right angle to the film, it can tear the film
- Hold the knife as parallel to the film as possible
- Place two pieces of film together, back-to-back and cut both together
- Roll the window down partially and use the window edge to cut the film to the profile of the top edge of the glass
- Roll the window back up and cut the bottom edge of the film lower than the weather strip

Continued...

Do's & Dont's
Of Auto Tinting
Cutting Film For Rear Windows - two piece installation

- Some rear windows may need to have the film applied in two pieces
- Pre-cut film on the outside of the window
- Place the film on the outside of the rear window and cut the bottom of the film to the shape of the bottom of the window
- Locate a demister line mid way up the window and cut the film across the window just above the line
- Pull the top piece down far enough to overlap the two pieces of film on top of the demister line
- Cut the top piece of film to the profile of the top edge of the window
- Cut the sides of the film to the profile of the window

Do's & Dont's
Of Auto Tinting
Cutting Film For Rear Windows - one piece installation

- Pre-cut film on the outside of the window
- Place the film on the outside of the rear window and cut the bottom of the film to the shape of the bottom of the window
- Cut the top piece of film to the profile of the top edge of the window
- Cut the sides of the film to the profile of the window
- Heat shrink the film to the curvature of the rear window (See heat shrink section for technique and tips)

Do's & Dont's
Of Auto Tinting
Cutting Film For Rear Windows - with a dot matrix and black border

- Pre-cut the film on the outside of the window
- Place the film on the outside of the rear window and cut the film to the shape of the black border of the window (cut oversize for trimming later)
- Heat shrink the film to the curvature of the rear window (See heat shrink section for technique and tips)
- Using a new stainless steel knife, cut the film to size (approximately 10mm larger than the dot matrix area)

*In all cases, cut around the rear window mounted brake light whilst the film is on the outside of the window. Do not remove the brake light.

Continued...

Do's & Dont's
Of Auto Tinting
Cutting Around Objects

- When cutting around an object that the film can lay over, place your finger on the object to keep the film from moving. Take a new stainless steel knife and puncture the film so that the knife touches the edge of the object. Holding the knife perpendicular to the object, simply trace around the object.
- Another way of doing this is to take a protractor with a series of different size holes, select the hole which matches the size of the object and cut the hole with the protractor
- When cutting around an object that the film cannot lay over, press the film tightly into an edge of the object. Take a knife and cut from this spot along the side of the object, continue cutting around the object pressing the film in to the edges of the object as you cut

Do's & Dont's
Of Auto Tinting
Removing Old Film

- If the window does not have a demister, the best way to remove old film is with a spray bottle containing a mild adhesive remover and a new sharp razor scraper
- Pull off as much film as possible manually; this will leave either just the old adhesive or the adhesive and a layer of film. Using a new razor scraper, scrape the adhesive and film from the surface whilst spraying it with adhesive remover.
- To remove old film from a rear window with a demister, extreme caution must be used so as not to damage the heat elements. Spray the window film with Kleanease solution which will soften the adhesive and allow you to peel the film from the glass
- Small pieces of film can be removed by heating gently with a heat gun or hair dryer before peeling them off.

Post Installation Information

FILM DRY OUT TIME

During the installation process, your dealer will remove as much of the mounting solution as possible, although a small amount will remain. Trapped installation moisture can cause small water bubbles and/or a slightly cloudy look. This is normal and should be expected. Do not attempt to pierce a water bubble during the dry-outtime. Water bubbles and the cloudy look will eventually dissipate. Attempting to pierce a water bubble in an effort to drain moisture will damage your film and is not covered by the warranty.

CLIMATE CONDITIONS & DRY OUT TIME

Certain climate conditions can extend the dry-out time for as long as 30 to 60 days after installation. Cold and non-sunny weather conditions can lengthen the dry-out time while warm weather and direct sun light exposure will shorten it. The dry-out time for metailized high performance automotive films will always take longer than conventional non-reflective films. If slow drying occurs, do not become alarmed. The trapped moisture will dry-out completely.

CLEANING

Do not clean the film until 30 days after installation. This will help secure proper curing of the special mounting adhesive to tile glass.

CLEANING SOLUTIONS

Most glass cleaners will work well, although a good cleaning solution for window film is 1/2 ounce of liquid dish soap added to 1 quart of fresh water.

CLEANING MATERIALS

A soft cloth or a clean synthetic sponge is recommended for washing the window film followed by another clean soft cloth or soft rubber squeegee for drying. To avoid scratching the film, do not use bristle brushes, abrasive scrubbing sponges or any cleaning materials that may have been contaminated with dirt particles, as is commonly the case when washing interior and exterior windows with the same cleaning materials. Some brands of paper towels are coarse enough to put fine scratches in the film, even films with Durogard® protective hard coat finish. While these scratches may be too thin to he seen at the beginning, they can damage the polished look of the film over time.

Installation Advisory

Proper Squeegeeing

Automotive

OVERVIEW

The information contained in this advisory will increase your understanding of the importance of proper squeegeeing. We have found over the years that the installation process is just as important as using a quality film. Squeegeeing plays an extremely important role in a customer's acceptance of your work ... both immediately and for the life of the finished job.

Squeegecing accomplishes two purposes. First, it removes the mounting solution used to keep the PS adhesive from touching dry glass thereby avoiding dry spots and air bubbles. Secondly, squeegeeing applies pressure to the film, which initiates the bonding process to the glass. Remember that the adhesive is pressure sensitive (PS) so the more pressure that is applied the better the adhesion will be between the film and the glass.

SQUEEGEEING PROPERLY

Many warranty claims are caused by excessive moisture left between the film and the glass. Typically, this is the result of improper or inadequate squeegeeing. The best technique for mounting solution removal Incorporates steady squeegeeing pressure with overlapping passes. Careful and methodically applied pressure with sharp, well-preserved tools can improve your installations the following ways.

- Diminishes pooling or hazy patterns after customer delivery (important for dealer work)
- Reduces the drying time of reflective and non-reflective films
- Strengthened bond between glass and film
- Improved optical clarity both initially and long term
- PS adhesives respond better to maximum solution removal

SQUEEGEE TOOLING

A handle attached to a squeegee provides the installer with a convenient grip and reduces a dependency on finger strength for achieving proper edge pressure. A squeegee handle also increases an installer's ability to apply consistent edge pressure. With the right squeegee tool attached to a handle you will find that the leverage of your forearm and body weight will easily become part of the technique.

Conventional squeegees such as the yellow smoothies can be surprisingly deficient at times. This is because of the weak angles at the point of contact and inconsistent pressure that your hand and fingers can apply. The yellow smoothie is not a bad tool, although some hard to reach areas such as the rear deck of a car can hardly get the edge pressure needed to properly remove the mounting solution. To make things more difficult, hasty inconsistent squeegee passes can dramatically increase the amount of mounting solution that is unknowingly left behind ... even in easy to access areas.

Continued...

Installation Advisory

Proper Squeegeeing

Automotive

Remember that the secret is to put as much pressure as possible on the film while squeegeeing. When compared to the softer squeegees, the harder squeegees such as the ones mentioned later in this installation advisory will remove considerably more mounting solution using the same amount of applied pressure.

UPGRADE YOUR TOOLS

The Blue Max or Clear Max Squeegees mounted into a stainless steel handle will have a dramatic effect on the edge pressure that transfers through the film. With steady pressure and consistent overlapping passes Installers will notice an immediate difference and improvement. After squeegeeing, it is important to press out all film surfaces to remove additional moisture with a hard card squeegee wrapped with a paper towel. Do this giving extra attention at the edges of the glass. This step is sometimes called "bumping," "tamping," or scaling the edges.

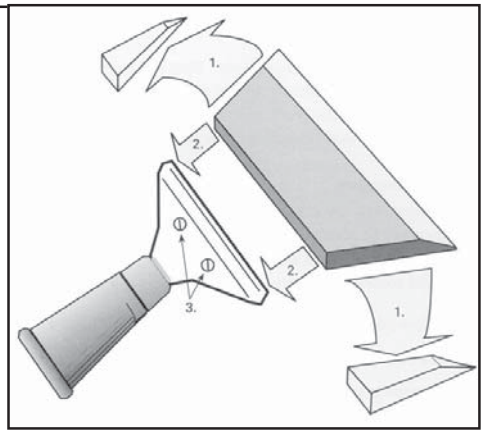
SEE ILLUSTRATIONS

Trim or modify the Blue Max or the Clear Max squeegees as shown below. The Blue Max is harder and stiffer than the Clear Max. The Clear Max is preferred due to its flexibility, which allows it to conform to curved surfaces although both are excellent additions to you toolbox.

DIAGRAM A

When you trim the ends of your squeegee blade at an angle as shown in diagram 'A' you will improve your ability to reach difficult to access areas such as the rear decks on most vehicles.

1. Trim squeegee blade ends at an angle as shown.
2. Fit squeegee blade into SS Handle.
3. Tighten screws to secure squeegee blade.
4. Replace squeegee blade when it becomes worn or nicked.



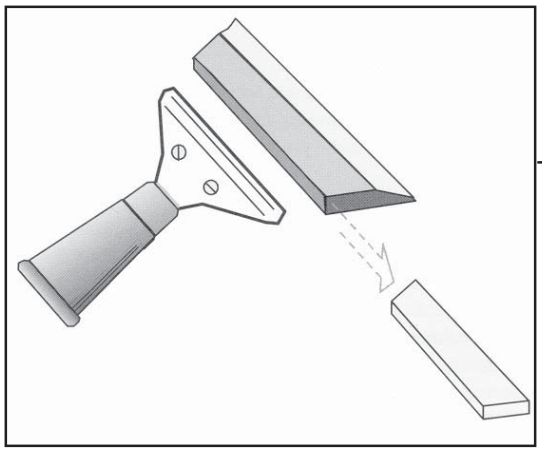


DIAGRAM B

Another squeege modification to consider is shown in diagram "B". Trimming the squeegee this way brings the blades edge closer to the handle. This will enable the installer to apply greater edge pressure. The customized squeegee help increase mounting solution removal efficiency, which promotes faster dry ou times. This customized squeegee is especially useful for safety & security film installations.

Technical Advisory

Quicker Dry Times

Automotive

SCOPE OF INFORMATION

Some window films that have experienced slower drying times have a unique characteristic. That is, the molecules are so tightly compacted together to create superior performance, that they slow the passage of water through the film during the drying phase after the film has been squeegeed. This advisory will provide a way to reduce, if not eliminate the pooling, haziness, and customer complaint problems that result from cold weather effects on drying of sputtered films.

REVIEW

When certain levels of water become trapped between the auto film and the glass, a hazy or foggy look can be observed. This is not very pleasing to the eye, and is not a product feature your customers willingly accept, especially if the car is new.

During cold weather months of the year in each of the northern and southern hemispheres, there is an increased tendency of installed window film to haze or turn foggy after the film has been squeegeed out. Dependent upon the volume of water (mounting solution) that has been left in between the film and glass, this can be observed 8 to 48 hours after the installation. In climates that are cooler (i.e. Northeast U.S., Canada, or Japan) this fogging occurs more frequently. Metallized film, or HP products (metallized/dyed laminates), are more prone to this behavior.

QUICKER DRY TIMES

The ability of water to diffuse through the film after installation depends on the temperature of the glass. The warmer the glass, the higher the rate water molecules will diffuse through the film. Metallized films are slower to dry due to the layering of metal molecules (stacking) and the gradual passage for water molecules trying to leave through these compact areas. More technically explained, the surface tension of the water molecules will essentially "cling" to other matter within the film. This essentially blocks the flow of remaining water, from leaving or diffusing through the film.

Water has a relatively high surface tension and in effect, lowers the rate of diffusion through the film. Isopropyl alcohol, added to water, lowers the surface tension and thus increases the rate of diffusion through the film. Higher diffusion rate will dramatically improve the water vapor transmission rate (WVTR) through the film. Thus your film will dry faster!

An effective level is 8 ozs. of alcohol to a 24 oz. (spray) bottle with your preferred mounting solution (soap and water mix). Or, 1 part alcohol 2 parts water. Rubbing Alcohol (70%) can be obtained in food stores, pharmacies, and various hardware stores. The amount (ratio mix) may vary from climate to climate. The above guidelines are a good starting point, yet cutting back to 1 part alcohol to 4 parts water may still achieve satisfactory results.

Keep in mind that dull edged squeegee tools and poorly applied squeegee techniques are commonly insufficient for removing mounting solutions in the first place. Pooling of water, that may be visible an hour after squeegeeing, will indicate insufficient technique. You may couple what has been explained above, with the information presented in another Installation Advisory titled, "Proper Squeegeeing." Combined and knowledgeable use of tools and techniques will eliminate problems of drying time.

CAUTION: Some discoloration can occur with car interior materials. Protect door panels and deck to prevent this solution from accumulating into the material.