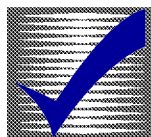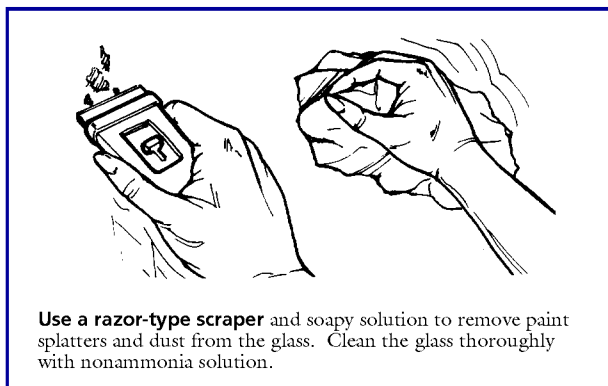# HOW-TO BOOKLET #3103
WINDOW INSULATION FILM
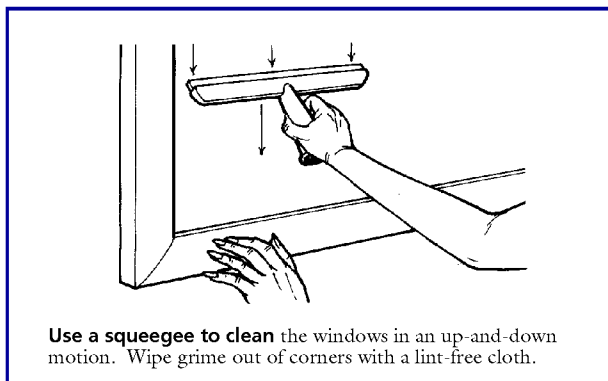
TOOL & MATERIAL CHECKLIST

- ❏ Window Film
- ❏ Spray Bottle
- ❏ Scissors
- ❏ Wetting Solution
- ❏ Ballpoint Pen

- ❏ Straightedge
- ❏ Tape Measure
- ❏ Razor Scraper & Blades
- ❏ Rubber Squeegee
- ❏ Clear Fingernail Polish

Read The Entire How-To Booklet for Specific Tools and Materials Not Noted in The Basics Listed Above

To save on energy bills (mainly air conditioning) and reduce heat gain inside the house, you can "tint" your windows with insulating window film. It is applied directly onto the inside surface of the window. It is strippable, if you ever want to remove it. Best yet, it is very inexpensive compared to buying pretinted glass and having it installed, or hiring a professional apply the window tinting for you. If you can install shelving paper or wallpaper, you can easily install window film yourself.

When buying insulating window film, carefully check the package and display to be certain the film you buy complements your type of window. Virtually any film can be applied to single-pane windows. However, only certain types of films are recommended for use on thermal dual-pane windows. If you don't know what thermal dual-pane windows look like, here's how you can tell:

These windows have two (or three) panes of glass, usually separated by a metal frame or channel. Look at the frame in a corner of the window; if you see two panes of glass separated about 1/2 inch from each other, the window is dual-pane. Single-pane windows don't have this channel.

Non-reflective window films for automobiles, boats, and other applications are usually available at specialty shops. Special precut film kits are available for tinting compound curved car windows. Residential (reflective) films should not be used on motor vehicles due to state auto tint laws.

Unless the package states otherwise, solar film is not recommended for glass bricks or patterned, leaded, etched, or frosted glass. It should not be installed onto Plexiglass or acrylic products, such as skylights.

Use a razor-type scraper and soapy solution to remove paint splatters and dust from the glass. Clean the glass thoroughly with nonammonia solution.

Use a squeegee to clean the windows in an up-and-down motion. Wipe grime out of corners with a lint-free cloth.

There are several types of insulating window films: non-reflective, mirror reflective, tinted reflective, and winter (low-E) insulating films. Most films block over 90% of the ultraviolet rays to reduce fabric fading. Reflective films primarily reflect over 50% of summer heat outside. New winter (low-E) films are usually compatible with dual or single panes and are designed to provide levels of summer and winter insulation. Most films are available in silver, smoke, or bronze colors.

APPLICATION TIPS

Insulating window film is easy for a do-it-yourselfer to apply. It doesn't require any special skills, except patience and a steady hand. The trick is to take your time, read the instructions thoroughly before starting and proceed step by step. Trying to take short cuts with film usually leads to disappointing results.

Apply window film any time, except when the sun is shining directly on the window that you are tinting. Too much heat can cause the wetting solution to dry too quickly. Cloudy days are good, but not rainy days. Outside temperatures should be above 50°F. Turn inside fans off to reduce dust in the air.

We recommend that you buy all materials and tools before you start the job. Some installation steps require action; you won't be in position to stop working in order to run to the store for a forgotten item.

Film is laminated like double-faced tape with a protective liner. Put a piece of transparent tape on each side of a corner, firmly press the two pieces of tape together, then pull apart to release the liner.

As to the wetting solution, we recommend the commercial product sold at the film display. However, you can make your own solution by adding 1 teaspoon clear dishwashing detergent to 1 quart of distilled (soft) water. Put the solution in a spray (pump or trigger) bottle so you can squirt, not wipe, it onto the glass and film surfaces.

1 With a razor-type scraper (illustrated), remove all stuck-on-debris—dried paint, smoke stains, decals—from the window glass. Spray the window with the soapy water solution before scraping. Be thorough; any debris left behind will be trapped (and visible) under the film.

Wash the windows thoroughly with the soapy water solution. Do not use ammonia or vinegar-based household cleaners because these ingredients can negate the bonding properties of most film adhesives. The entire surface must be clean like new glass. Use a squeegee instead of paper towels. The squeegee works best in downward vertical strokes. Wipe the edges of the window frame (gasket) with a soft cloth. Keep the squeegee handy; you will be using it to install and clean the film.

2 Carefully unroll the film from the package on a flat surface: countertop, table, or clean floor. Handle the film gently. Like aluminum foil, film can crease (and stay creased) if mishandled.

3 Measure the dimensions of the first glass surface to which you plan to apply film. Double-check your measurements. Measure each pane before you tint it. Even though similar looking surfaces may appear to be the same size, they are usually different. It is better to measure, tint, and trim each window than to precut all the pieces of film and to run the chance of mixing up various precut pieces.
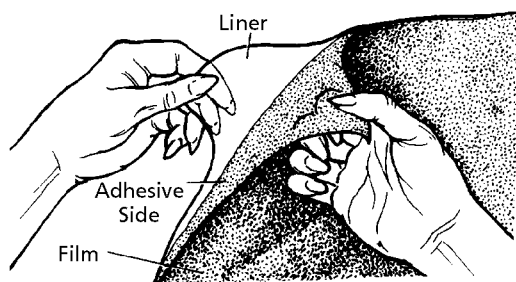
4 When you're certain of the glass measurements, cut the film sheet so that it will overlap the surface to be covered by about 1-inch or just a tad less. You can mark the liner side of the film lightly with a ballpoint pen, grease pencil, or key to mark the cutoff lines.

Insulating window film has two parts, like double-faced tape. It has a clear liner that protects the adhesive surface. This liner must be removed before you install the film. Don't remove it yet; just know that it's there.
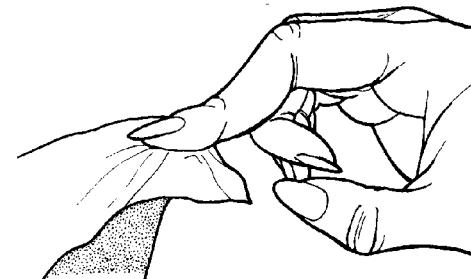
5 Now spray the soapy water solution (1 teaspoon clear liquid detergent to 36 ounces water) on the glass surface you plan to tint. Spray the glass liberally so the water is sheeting.

At this point, you need to decide whether you can begin applying the film or whether you need to pre-trim the film. If your windows are small (less than 6 square feet), you can probably begin to apply the film immediately and then trim the film after tinting the window. If so, skip to Step 7 and proceed. If your windows are larger—patio door, picture windows, storm panes—and/or you want to take your time, read Step 6 next.
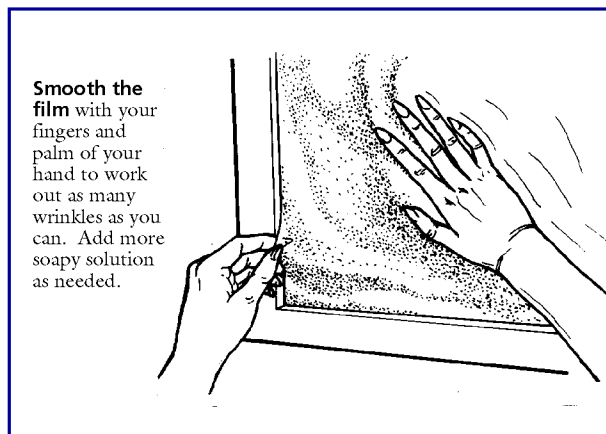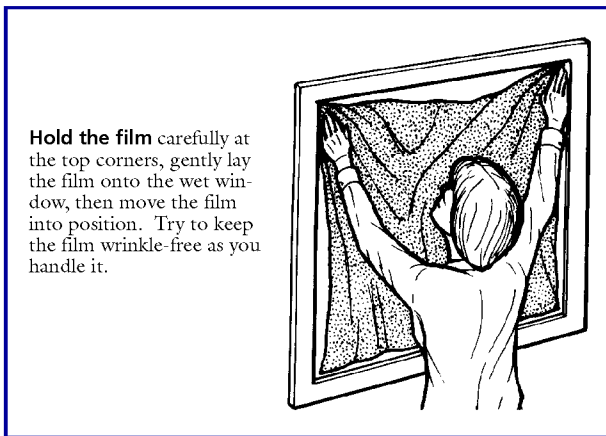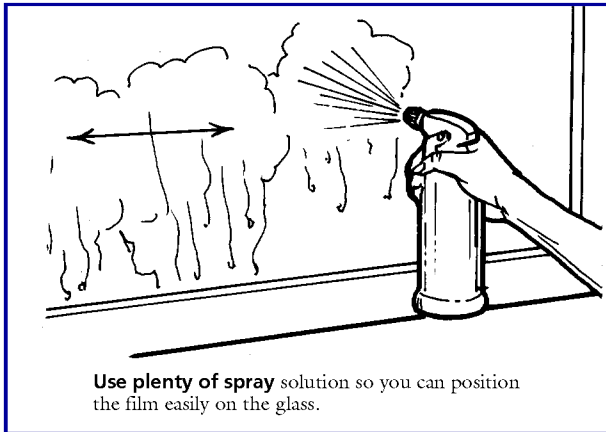
6 Put the film on the window so the liner side faces you.

Throw away the clear liner. It had protected the tacky adhesive side of the film, which goes onto the glass.

Use plenty of spray solution so you can position the film easily on the glass.

Hold the film carefully at the top corners, gently lay the film onto the wet window, then move the film into position. Try to keep the film wrinkle-free as you handle it.

Smooth the film with your fingers and palm of your hand to work out as many wrinkles as you can. Add more soapy solution as needed.

NOTE: Step 7 tells you how to separate the liner. You may want to try this on a small piece to decide whether or not the liner is on the inside or outside of the curl in the film.

Slide the film around on the soapy wet window so your fingers get the "feel" of it. Spray the soapy water on the surface of the film facing you and squeegee the film carefully so that it adheres and conforms to the glass. Work out the wrinkles in the film with your squeegee or fingers. Always keep the film surface wet where you plan to squeegee to avoid scratching the film.

When you're finished, the film should be lying flat on the glass surface, with no wrinkles in it, and it should slightly overlap the window frame (gasket).

Make a trimming guide so you can cut the film on the window. Almost anything straight and 1/16" to 1/8" wide will work: the edge of a ruler or yardstick or a painting trim guide. Put the trim guide against the side (gasket) of the window, then put your razor blade (or utility knife) against the trim guide. Cut completely around the perimeter sides of the film to trip away the excess film. You want a little clear glass to show all around the edge of the film. This gap allows you to squeegee out the water (see Step 11) and allows the window to expand properly once the film is installed.

If trimming the film on the window is too difficult, score the line that you plan to trim, peel the film carefully from the window, take it to a flat surface, and cut the scored lines with a utility knife or very sharp scissors. Most people prefer trimming the film on the window to insure that the edges match the dimensions of each window exactly.

7 Remove the clear protective liner from the back of the film. It peels apart like double-faced tape. Keep in mind that it is stuck together very tightly. If your fingernail won't

separate the liner at the corner, press two pieces of transparent tape (each about 4" long) onto each side of the film. Using the two pieces of tape, as "pull tabs," quickly pull apart. The liner looks like a clear sheet of thin plastic; the window film looks exactly like it did before you removed the liner. Peel the liner off the film diagonally: i.e.,—front top right corner toward the bottom left corner. If you are using a large piece of film, spray the soapy solution on the exposed adhesive side after each 12" of liner that you remove. This "misting" process will keep dust from settling on the adhesive and will reduce any static electricity, which can cause the liner and film to try to spring back together as you're peeling off the liner.

Remember that the liner covers the adhesive side of the film, so the exposed surface will feel tacky. Once the liner is removed, DO NOT let the film touch itself. If the film clings to itself, you may have difficulty pulling it apart without creases and kinks. Creases and kinks are usually permanent and will appear even after you squeegee the film.

8 Use a full spray bottle filled with the soapy water solution to thoroughly spray the glass. This solution, combined with the action of the squeegee, activates the glue that holds the film to the glass.

9 Pick up the pretrimmed film by its corners. Let it flop between your hands. Then carefully fit the top corners and top edge of the film into the glass surface.
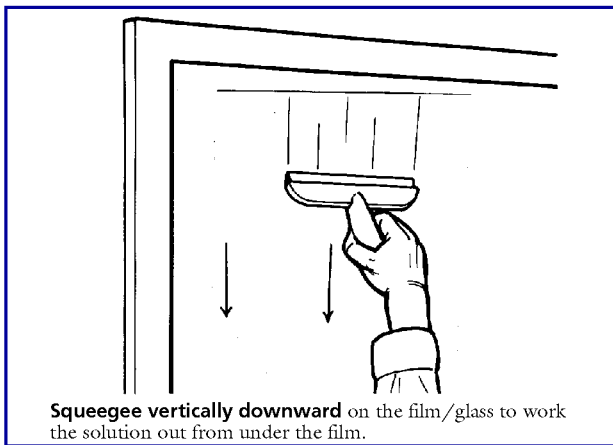
As you found out earlier, you can slide the film anywhere you want, as long as the window is thoroughly wet. Position the film. If the film doesn't want to slide easily, add more wetting solution to the glass surface. Remember that each time you lift the film from the glass and respray, you're rinsing away more adhesive. In most cases, you don't need to peel back the

film and get out air bubbles. As long as you spray the TOP of the film, you can easily squeegee all air bubbles out to the sides.
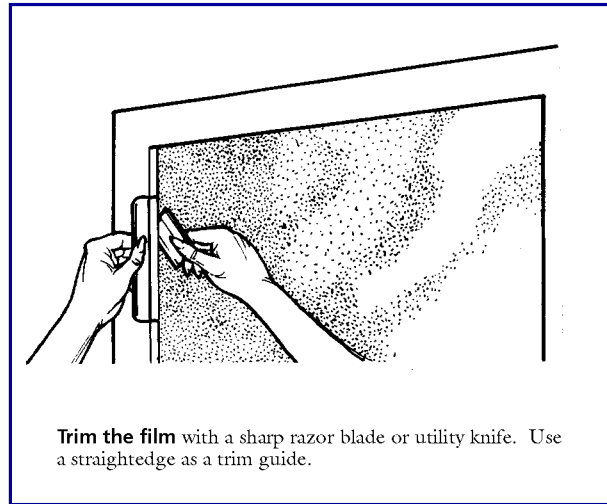
10 Use your fingers or the edge of the palm of your hand to smooth out the wrinkles in the film. Work from the top down. Once the film is basically in position and wrinkle-free, you are ready to begin the final squeegeeing. This is the point where patience becomes really important.

11 Spray the top of the film with a soapy solution until it is very wet. Press firmly on the squeegee. First, slowly squeegee from the top horizontal edge of the film (i.e.,—front top left to top right corner). Second, squeegee vertically downward from top center to the bottom center. Third, begin the process of squeegeeing in downward strokes, to the left and right of the central (second) stroke. By squeegeeing downward, you draw all the water in one direction and prevent creases in the film.

As you squeegee, you should see all the little wrinkles and water bubbles disappear under the film. If you don't, add more solution on top of the film and re-squeegee.

Squeegee vertically downward on the film/glass to work the solution out from under the film.

Trim the film with a sharp razor blade or utility knife. Use a straightedge as a trim guide.

You may notice little "fingers" forming at the bottom of the film. Don't worry about these until you finish squeegeeing the entire window. These "fingers" are caused by water crawling up under the bottom edge of the window. To eliminate them, respray the top side of the bottom few inches of the film. Start in one corner and work across the window; squeegee the water down and out, then soak it up with a dry tacky cloth (i.e.,—an old tee-shirt). You may wish to wipe the cloth around the perimeter of the window gasket to soak up any residual water.

FINAL TOUCHES

When the project is complete, realize that the normal curing time for the adhesive to bond to the glass is about 10 to 20 days. During that time the film may look a little cloudy or out of focus. This is normal, especially in cooler, wet climates. The warmer the temperature and the drier the climate, the faster the film will cure. Little white or clear pinhead-size spots should disappear during the curing process. Spots with black centers show permanently captured dust or grit under the film.

Wait at least 1 month before cleaning the film. To clean, use the same soapy water solution and a pliable, clean squeegee. Do not use any household cleaners or ammonia or vinegar-based products. Do not use newspaper or paper towels because they will streak and scratch the film. A designated scratch-resistant or abrasion-resistant film may be cleaned with any normal household cleaners and paper towels.

If the corners of the film loosen, apply a little clear, flat fingernail polish under the film. Press the film down and hold it steady for a few minutes.

Some professionals recommend that people living near saltwater should "saltproof" the film by applying one coat of clear, flat fingernail polish with a small paintbrush around the entire perimeter of the film.

Window film is designed as a permanent application; however, it can be removed. Simply loosen the corner with a razor blade, then peel the film off in one sheet. Keep your fingers near the glass as you pull the film away, so the film doesn't stretch and tear. To remove the dried adhesive, spray the window with a solution of 1 part water to 1 part ammonia. Hand massage this solution into the adhesive until the window develops a milky white appearance and the adhesive feels soft and gummy. Respray and shave (like a snowplow) the soft adhesive off the glass with a clean, new razor blade. Whenever the adhesive feels dry, respray so you won't scratch the glass. After removing the adhesive, respray and clean the window with the soapy solution and a squeegee. Wait at least 2 days before reinstalling film.