

A Professional Guide To Window Film & Glass Compatibility



Since 1982, our experience makes yours better.

A Professional Guide To

Window Film & Glass Compatibility

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Introduction

This booklet was created to help you understand the criteria for determining the best Express Window Films product for each application and situation. We want you to know exactly how window film works so that you and your dealer can make the best choice.

As part of the selection process, your dealer will perform a thorough assessment of your installation environment, whether a home or business. Then together, you can select the appropriate Express Window Films product from a wide range of window film options.



Express dealers are independent professionals who are committed to selecting and installing the correct window film to ensure your complete satisfaction.

Solar Energy & Its Effect On Glass

As solar control window film continues to grow in popularity, it's more important than ever for consumers to understand exactly how the installation of window film impacts the glass it is being installed on.

When the proper window film is installed on glass without flaws or imperfections, there are seldom any problems. However, under certain circumstances, the installation of an improperly selected window film can cause thermal shock fracture (TSF) or seal failure in an insulated glass unit (IGU).

Circumstances that may promote TSF or IGU seal failure include:

- Improper window film choice
- Flaws or imperfections in the glass
- Tightness of glass framing
- Rapid temperature changes and shading
- Environmental conditions

BEFORE Express Window Film



Without Express Window Films, harsh sunlight and glare interferes with visibility – inside and out.

AFTER Express Window Film



Installing Express Window Films will greatly improve interior clarity and enhance the exterior view.

Glass WITHOUT Window Film

To select the correct window film you need to understand what happens when solar energy strikes a pane of glass. Most of the solar energy is transmitted through glass without window film. Only a small amount is reflected and absorbed as shown in illustration #1.

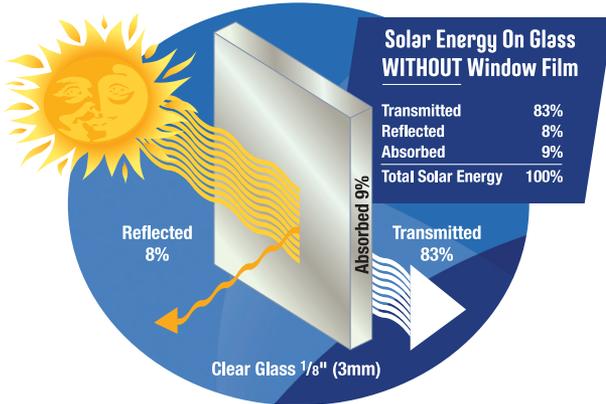


Illustration #1
 Untreated glass allows most of the solar energy to transmit causing hot spots and fading of valuable furnishings. Select Express Window Films reject up to 82% of total solar energy and all versions block out almost 100% of damaging and dangerous ultraviolet.

NOTE: Although most window films block out almost 100% of harmful and damaging ultraviolet, it is important to understand that no window film can totally prevent or stop fading.

Glass WITH Window Film - A Dramatic Transformation

Installing professional quality Express Window Films on a pane of glass can dramatically change how it transmits, reflects and absorbs solar energy. The degree of that change is determined by the construction characteristics of the window film you select.

Illustration #2 shows how Express DR Night View Ceramic 25 significantly reduces solar energy transmission by increasing reflection and absorption.

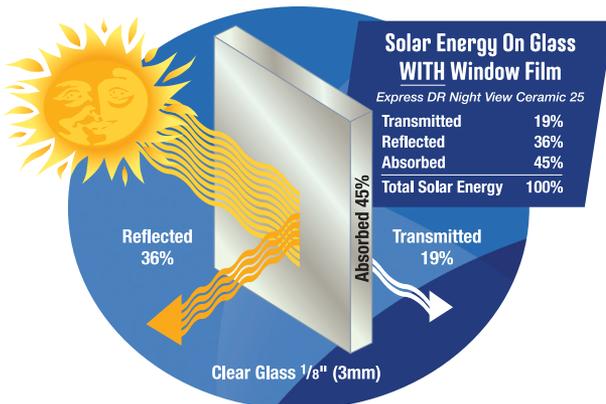


Illustration #2
 Express Window Films effectively reduce the amount of solar energy transmitted through glass and many versions are almost undetectable once installed.

Solar Heat Absorption, TSF & IGU Seal Failure

All window film causes increased solar heat absorption in the glass pane treated with film, although the absorption rate will vary depending on the window film selected. This warming of the glass results in thermal expansion, which is quite normal. However, certain film-to-glass combinations can cause excessive solar heat absorption, leading to an increased risk of thermal shock fracture (TSF) and/or dual-pane insulated glass unit (IGU) seal failure.

When excessive thermal expansion occurs in a single pane of glass, the result can be glass breakage, referred to as thermal shock fracture (TSF). When excessive thermal expansion occurs in a dual-pane insulated glass unit (IGU) the inside pane treated with window film can warm slightly more than the untreated outside pane. This can cause a disparity in thermal expansion between the two panes of glass, which can result in thermal shock fracture and/or IGU seal failure. The latter typically causes moisture to trap between the dual panes of glass.

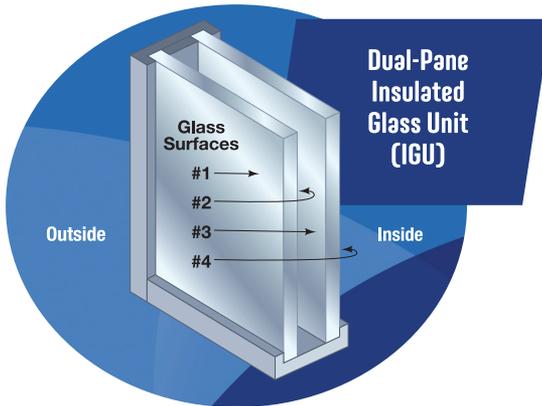


Illustration #3

Most window films are installed to the inside pane of a dual-pane IGU - glass surface #4. Selecting an improper film can cause the glass pane treated with film to experience thermal expansion at a higher rate than the untreated outside pane, threatening the integrity of the IGU seal and/or causing thermal stress fracture.

Many Express Window Films are safe for IGU applications. Your independent Express Window Films dealer will guide you through the process of selecting a safe window film for your application.

Assessing Installation Characteristics

In an effort to help you select the best possible window film for your application, your independent Express Window Films dealer will inspect the characteristics of the entire installation, documenting items such as framing as well as flaws and imperfections in the glass that can increase the risk of TSF and/or IGU seal failure.

Here are some of the problematic items your dealer will look for.

Flaws & Imperfections In Glass

Sometimes tiny chips or cracks may exist at the edges of the glass pane. That's why your dealer will inspect every glass pane thoroughly in order to provide you with the best possible installation proposal.

Tightness Of Glass Framing & Damaged Molding

Glass naturally expands when heated and contracts when cooled. If a glass pane is fitted too tightly in its frame there may not be much room for it to expand. Glass in an overly tight frame or a frame with damaged or dried out molding, has a higher probability of TSF or IGU seal failure.

Rapid Temperature Changes & Shading

TSF can be caused by uneven heat absorption on the surface of the glass. This can occur when glass is partially shaded by trees, roof overhangs, or other buildings. Often this shading is enough to cause an extreme difference in glass surface temperatures. Another cause of TSF is a dramatic and rapid change in temperature, such as the kind of changes that often occur from night to day in mountainous areas or in the desert. When glass does not have time to cool down or heat up slowly, its surface temperature may be uneven, leading to a higher risk of TSF or IGU seal failure.

Interior Environmental Conditions

Even with a favorable environment, it's possible for glass to suffer TSF or IGU seal failure if the inside space close to the window does not have appropriate air circulation. Heat can become trapped against the glass if there is not enough space between blinds or other window treatments and the pane. If heat becomes trapped, it can lead to excessive thermal absorption increasing the risk of TSF or IGU seal failure.



Film-To-Glass Installation Guide Chart

The best way to minimize the probability of TSF and IGU seal failure is to choose the correct window film for your application. The film-to-glass installation guide chart (EWF catalog #7420) and a thorough assessment of the windows will help your dealer make a proper window film recommendation.



Dual-Pane IGU's With Low-E

Dual-pane, insulated glass units (IGU) with the low-e feature are becoming increasingly popular because they help retain inside room heat. Select window films installed on glass with the low-e feature may produce an increased risk of TSF or IGU seal failure. When selecting your window film product, adhere to the film-to-glass installation guide chart as it applies to dual-pane IGU with the low-e feature.



Installations Larger Than 2,500 Square Feet

No matter what the film-to-glass installation guide chart says, any window film installation that is over 2,500 square feet will require written approval from the warranty service department at Express Window Films, to ensure warranty coverage availability.

IMPORTANT: See the section titled **Film-To-Glass Installation Cautions** for a detailed listing of installations that cannot be approved for TSF-IGU warranty coverage.

TSF-IGU* Seal Failure Warranty

Certain film-to-glass installations are approved for TSF-IGU warranty coverage and they are identified as such on the film-to-glass installation guide chart, EWF catalog #7420. See the Express Window Films limited TSF-IGU warranty certificate, EWF catalog #7320 for specific TSF-IGU warranty details.



Limited TSF-IGU Warranty

5-Year (TSF) Thermal Shock Fracture • 3-Year (IGU) Insulated Glass Unit Seal Failure

Installation Date ____/____/____	OVER 2500 Sq. Ft. Authorization Code ____/____/____
____/____/____	____/____/____

Installing Dealer

Name _____

Company _____

Address _____

City _____

Phone _____ State _____ Zip _____

Email _____

Original Buyer

Name _____

Company _____

Address _____

City _____

Phone _____ State _____ Zip _____

Email _____

Limited TSF-IGU Warranty
Express Window Films, LLC warrants professionally sold and installed Express brand window films against (TSF) Thermal Shock Fracture and dual-pane (IGU) Insulated Glass Unit seal failure per the limits expressly stated within this warranty. Warranty applies only to TSF and/or IGU seal failure resulting directly from an approved film-to-glass installation¹. Coverage starts from the date the Express window film was installed, extends to the Original Buyer, is not transferable and is only applicable on interior vertical glass installations in the USA and Canada. This limited TSF-IGU warranty coverage is VALID ONLY if the window manufacturer's original TSF-IGU seal failure warranty is in force. This limited TSF-IGU warranty is VOID on buildings with a pre-existing condition of glass breakage and/or insulated glass unit seal failure. Installations over 2500 square feet must be pre-approved in writing with authorization code provided by the Express Window Films warranty service department prior to installation for this TSF-IGU warranty to be valid. For more information see the window film & glass compatibility booklet¹ and the film-to-glass installation guide chart.

5-Year Limited Warranty - (TSF) Thermal Shock Fracture
If (TSF) Thermal Shock Fracture occurs as a direct result of an approved film-to-glass installation², Express Window Films will replace the broken glass and the window film per the limits expressly stated within this limited TSF-IGU warranty.

3-Year Limited Warranty - (IGU) Insulated Glass Unit Seal Failure
If (IGU) Insulated Glass Unit seal failure occurs as a direct result of an approved film-to-glass installation², Express Window Films will replace the broken glass and the window film per the limits expressly stated within this TSF-IGU warranty.

Disclaimers
To validate this limited TSF-IGU warranty, original buyer must produce documentation proving their window manufacturer's original TSF-IGU seal failure warranty is valid and in force. This limited TSF-IGU warranty shall not create new, or extend coverage beyond the window manufacturer's original TSF-IGU seal failure warranty term limits. Claims against this warranty shall not extend or renew its duration or extend or replace the duration of the window manufacturer's original TSF-IGU seal failure warranty. Express Window Films expressly limits its liability under this warranty to repair and/or replacement of the broken glass, the failed IGU and the Express window film product. Express Window Films assumes no responsibility for any loss arising out of, or resulting from the installing dealer's failure to follow industry accepted installation standards or failure to adhere to film-to-glass installation guide chart³. Express Window Films assumes no responsibility for any other loss or damage, such as compensatory, direct, incidental, consequential, punitive or any other damage arising out of the use of, or inability to use the window film. By this warranty Express Window Films does not assume any liability for any warranty, direct, incidental, consequential, punitive or any other damage arising out of the use of, or inability to use the window film. This warranty may give you specific legal rights which can vary from state to state.

TSF-IGU Warranty Coverage Availability
The film-to-glass installation guide chart³ displays window film and glass combinations that are approved for TSF-IGU warranty coverage under normal conditions. Regardless of the installation rating displayed on the film-to-glass installation guide chart³, there are INSTALLATION CAUTIONS specific to condition of the glass and framing and/or the installation environment that will void TSF-IGU warranty coverage. These film-to-glass installation cautions are displayed on the film-to-glass installation guide chart³ and on the back of this TSF-IGU warranty certificate.

¹EWF catalog #7410 - Window Film & Glass Compatibility Booklet | ²EWF catalog #7420 - Film-to-Glass Installation Guide Chart | ³EWF catalog #7430 - Installation Proposal Form

TSF-IGU Seal Failure Warranty Claims

In the event that you may need to make a TSF-IGU warranty claim, see the Express Window Films limited TSF-IGU warranty certificate, EWF catalog #7320 for specific TSF-IGU warranty claim details.

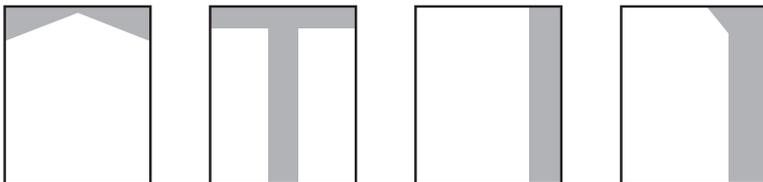
*TSF-IGU = Thermal Shock Fracture - Insulated Glass Unit

Film-To-Glass Installation Cautions

Regardless of the installation rating displayed on the film-to-glass installation guidance chart, (EWF catalog #7420) TSF-IGU warranty coverage is NOT AVAILABLE if any of the following conditions exist:

1. Any installation over 2,500 square feet, unless written approval has been obtained.
2. Any single glass pane totaling more than 100 square feet.
3. Any IGU greater than 40 square feet.
4. Any glass pane with glass edge dimension greater than 10 feet.
5. Any triple or quadruple pane IGU.
6. Any single clear glass 3/8 inch or thicker.
7. Any single tinted glass 1/4 inch or thicker.
8. Any IGU with seal failure prior to installation.
9. Any building with a history of glass breakage (TSF) and/or IGU seal failure.
10. Any chipped, cracked, scratched or otherwise damaged glass prior to installation.
11. Any glass where the film is not installed edge to edge.
12. Any glass with more than one window film installed on top of another.
13. Any plastic, polycarbonate or non-glass surface.
14. Any laminated, round, textured, bent, patterned or wired glass.
15. Any glass with paint, lettering and/or vinyl graphics.
16. Any framing system of concrete.
17. Any framing sealant, glazing compound and/or gasket material that is no longer resilient.
18. Any automotive film used for architectural applications will not have warranty coverage unless written approval has been obtained.
19. Any glass experiencing up to 25% outside shading, including more than 25% of the glass perimeter. (See harmful shading examples below)

Harmful Shading Examples



Invisible and indispensable — that's Express Window Films. It provides unsurpassed comfort and protection to make everyday life a pleasure for you and your family, yet you'll never even know it's there.





Ask your Express
Window Films Dealer
About DR Night
View Ceramic!

Express DR Night View Ceramic

Dual reflective films are more popular than ever, and the DR Night View Ceramic series has become a designer's choice for residential and commercial applications.

These premium window films reduce interior reflectivity for unaltered nighttime views. They also deliver impressive solar performance, dual-pane IGU compatibility and come with a strong warranty.



Benefits

- 99% Ultraviolet Rejection
- Increased Protection From Fading
- Outstanding Solar Energy Performance
- Low Nighttime Inside Reflectivity
- 5 Performance Shades To Choose From
- Beautiful Color Stable Charcoal Tone
- Advanced Nano Ceramic Construction
- Dual-Pane Insulated Glass Unit Safe
- Time Tested, Ultra Clear Dry Adhesive
- Scratch Resistant Extends Product Life

EXPRESS
Window Films

Since 1982, our experience makes yours better.



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