

3M Window Films

1. Product Name

3M Ultra Prestige Safety and Security Window Films

2. Manufacturer

3M™ Building Safety Solutions Window Film
 3M Center, Building 0223 02-5-24
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 (800) 430-1704
www.3m.com/windowfilm

3. Product Description

BASIC USE

3M™ offers a large selection of window films to meet a variety of requirements. 3M window films reject heat and block nearly all of the sun's harmful ultraviolet rays. Many are recommended by The Skin Cancer Foundation as effective UV protectants. 3M window films resist peeling, bubbling, scratching and abrasion, and are backed by warranties that are among the most comprehensive available.

3M's premium Ultra Prestige Safety & Security Window Films are specifically designed to help protect people and property from shattered window glass resulting from events such as severe weather, street crime and bomb blasts. Instead of tearing, these films stretch to help keep the window in the frame. The film is bonded to the glass with advanced 3M adhesives so that if the glass does break, its shards are held together by the film, further reducing the chance of injury.

The Ultra Prestige product line is available in 2 film styles, each having slightly different performance properties in order to meet a variety of application requirements. Ultra Prestige films have been tested and retested under conditions including windstorms, bomb blasts and flying debris, and have also undergone a rigorous series of durability tests. Both styles of Ultra Prestige Window Film products meet or exceed industry standards for impact and tear resistance. See Table 1 for property comparisons.

In addition to their safety and security benefits, Ultra Prestige Window films reject up to 97% of the sun's infrared light and block 99.9% of the sun's harmful ultraviolet rays. This helps to increase indoor comfort, lower energy costs

and reduce the harmful effects of the sun's rays on interior furnishings in both commercial and residential applications. These films also have interior reflectivity that is less reflective than or just 1% greater than the glass they cover. And, because they are manufactured without metals, they are not susceptible to corrosion in coastal environments and do not interfere with mobile phone reception.

COMPOSITION & MATERIALS

Ultra Prestige Window Films have a nominal thickness of 6 mil and are composed of 2 layers of optically clear polyester materials laminated together. Combined, the laminated film material contains at least 220 microlayers, and has an acrylic, pressure-sensitive adhesive on one side and an acrylic, abrasion-resistant coating on the other.

The film contains no metals, but does incorporate infrared absorbing carbon and/or metal oxide particles, and is uniform without noticeable pinholes, streaks, thin spots, scratches, banding or other optical defects. The variation in total transmission across the width at any portion along the length does not exceed 2% over the average.

TYPES & SIZES

- Ultra Prestige S70 - Clear film
- Ultra Prestige S50 - Clear film

Ultra Prestige Window Films are available in 100' (30 m) rolls, in widths of 40", 50" and 72" (1016, 1270 and 1829 mm).

BENEFITS

- Provides enormous strength and tear resistance compared to standard polyethylene terephthalate (PET) films
- Improves personal, property and asset protection from severe weather, blasts and crime by minimizing flying glass
- Substantial heat rejection provides energy savings and enhanced comfort
- Increased on-angle heat rejection provides additional performance benefits
- Low reflection enhances views and overall beauty
- No metals; 3M technology provides superior performance with no corrosion or interference with cell phone signals
- Extends the life of furnishings by rejecting UV rays, the single largest component of fading
- Premium 3M manufacturer's warranty



4. Technical Data

APPLICABLE STANDARDS

American National Standards Institute (ANSI)
 - ANSI Z97.1 Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test

ASTM International (ASTM)

- ASTM D882 Standard Test Method for Tensile Properties of Thin Plastic Sheeting
- ASTM D1004 Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
- ASTM D1044 Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion
- ASTM D2582 Standard Test Method for Puncture-Propagation Tear Resistance of Plastic Film and Thin Sheeting
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E308 Standard Practice for Computing the Colors of Objects by Using the CIE System
- ASTM E903 Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres (Withdrawn 2005)
- ASTM G26 Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Withdrawn 2000)



U.S. General Services Administration (GSA) - GSA-TS01 Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings

APPROVALS

The Skin Cancer Foundation

PHYSICAL PROPERTIES

Emissivity and u-value properties are determined based upon the established calculation procedure defined by the 1997 ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) Handbook of Fundamentals. See Table 1 for physical property details of Ultra Prestige Window Films.

FIRE PERFORMANCE

Ultra Prestige Window Films meet Class A requirements for surface burning characteristics when tested in accordance with ASTM E84:

- Flamespread - 25 maximum
- Smoke developed - 450 maximum

5. Installation

PREPARATORY WORK

Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact. Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

Provide clear access to work areas. Verify that site conditions are acceptable for installation. Do not proceed with installation until unacceptable conditions are corrected.

Examine glass surfaces to receive the new film and verify that they are free from defects and imperfections that will affect the final appearance. Correct and/or note all such deficiencies prior to applying the film.

Use protective tarps or drop cloths to cover interior furnishings, floor, carpet, window ledges and walls near the window(s) receiving the film installation. Turn off or cover heating, air conditioning and ventilation ducts to reduce dirt and dust in the air or on the glass.

Place toweling or other absorbent material on the window sill or sash to absorb moisture generated by the cleaning and film application process. Clean the window and window framing thoroughly with a neutral cleaning solution. If the window putty or seal is old and cracked, tape or seal it prior to washing the glass. Using a solution comprised of 90% water to 10% ammonia, clean glass with a blade scraper or industrial razor to ensure the removal of contaminants. Thoroughly rinse the glass from top to bottom with water from a pressure

spray tank. Squeegee the entire glass surface. Dry the glass edges and window frames using a lint-free towel.

METHODS

Measure the glass and cut the film edges neatly and squarely to fit, or cut the film 1" (25.4 mm) wider and longer for trimming to size after positioning. No edge seal is required.

Mix a film slip solution comprised of 1 capful of baby shampoo or dishwashing liquid to 1 gallon (3.8 L) of water. Spray the solution on the glass and film to facilitate proper film positioning. Use no more soap than is needed to provide slip. Apply film to the glass and lightly spray it with the slip solution. Use polyplastic bladed squeegees to remove excess water and to maximize the bonding of the pressure sensitive adhesive.

Trim the film to size if needed before using the squeegee a second time, making sure to use a new blade tip after 3 - 4 cuts. Spray the

TABLE 1 PHYSICAL PROPERTIES

Model	Ultra PR S70	Ultra PR S50
Thickness	6.0 mil	6.0 mil
Emissivity (ASHRAE)	0.78	0.78
U-value (ASHRAE)	0.99	0.99
Visible light transmission (ASTM E308)	67%	49%
Visible reflection - Exterior (ASTM E903)	10%	8%
Visible reflection - Interior (ASTM E903)	10%	10%
Ultraviolet rejected (ASTM E903)	> 99.9%	> 99.9%
Infrared energy rejected (ASTM E308, E903)	97%	97%
Luminous efficacy (ASTM E903)	1.18	0.96
Shading coefficient - at 90 degrees (normal incidence) (ASTM E903)	0.57	0.51
Total solar energy rejected (TSER) at 90 degrees (normal incidence) (ASTM E903)	49%	56%
TSER - 60 degree angle (ASTM E903)	59%	63%
Graves area tear	> 780 lb %	> 780 lb %
Safety glazing	400 ft-lb, Category II	400 ft-lb, Category II
Air blast testing - minimum level 3 @ 4.0 psi	Yes	Yes
Tensile strength	30,000 psi	30,000 psi
Young's modulus	500k psi	500k psi
Puncture propagation tear (PPT)	7.5 lb	7.5 lb
Elongation	130%	130%
Break strength per inch width	120 lb	120 lb

Note: Performances are based upon 1/4" (6.4 mm) clear glass.



slip solution to the film and squeegee a second time. Bump the film edge with a lint-free towel wrapped around the edge of a 5-way tool. Wipe the frame edge dry.

After installation, the film may have a dimpled appearance from residual moisture. Under reasonable weather conditions, the film will dry flat within 30 days.

PRECAUTIONS

Use all necessary means to protect the film before, during and after installation.

BUILDING CODES

Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.

6. Availability & Cost

AVAILABILITY

Contact 3M Building Safety Solutions Window Film for information on local availability, or reference the 3M online tool under Customer Support - Where to Buy at <http://solutions.3m.com>.

COST

Budget installed cost information may be obtained from 3M Building Safety Solutions Window Film.

7. Warranty

Ultra Prestige Window Film materials and workmanship are warranted to maintain solar reflective properties without cracking, crazing, delaminating, peeling or discoloring for a period of 15 years. In the event that the product is found to be defective under warranty, the seller will replace such quantity of the film proved to be defective, and will additionally provide the removal and reapplication labor free of charge. 3M also warrants against glass failure due to thermal shock glass fracture. This is warranted to a maximum value of \$500 per window, provided the film is applied to recommended types of glass and the failure occurs within 60 months from the start of application. Any glass failure must be reviewed by 3M prior to replacement.

Complete warranty terms and conditions are available from the manufacturer. For details, consult 3M Building Safety Solutions Window Film.

8. Maintenance

The film may be washed 30 days after application using synthetic sponges or soft cloths with common window cleaning solutions, including

ammonia solutions. Abrasive cleaning agents and bristle brushes that could scratch the film must not be used.

9. Technical Services

Technical assistance, including more detailed information, product literature, test results, project lists, assistance in preparing project specifications and arrangements for application supervision, is available by contacting 3M Building Safety Solutions Window Film.

10. Filing Systems

- Reed First Source®
- MANU-SPEC®
- Additional product information is available from 3M Building Safety Solutions Window Film upon request..

