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This guide specification specifies clear and tinted solar control security and safety glazing films applied to glass units either as a field application to existing glass units or as part of glass unit or window unit fabrication. ShatterGard markets a complete line of glazing films under the BurglarGARD", StormGard", BlastGARD", ScratchGARD " UVGARD" trade names. Security and safety glazing film applications have been ballistic-resistance tested by H.P. White Laboratories, Inc. They have also been utilized in blast mitigation testing by WBE Engineering, Inc. ShatterGARD security and safety glazing films are installed by ShatterGARD-certified installers in the all U.S. and several other countries.

SECTION 08861

SECURITY AND SAFETY GLAZING FILM/ YEAR 2003



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PART 1 GENERAL

1.01 SECTION INCLUDES

Specifier's Note: ShatterGARD Security and Safety Glazing Films provide a wide range of beneficial performance for facilities subject to both security and environmental risks, including the following:

- Burglary Resistance: ShatterGARD BurglarGARD films deter "smash and grab" burglaries without the use of costly and unsightly bars or grills.
- Hurricane Protection: Results of comparison testing of window units glazed with security and safety glazing film and tested using ASTM E 330 demonstrate ShatterGARD StormGARD film's ability to reduce window unit failure and prevent the projection of glass shards into an occupied area under hurricane-force wind loads.
- Solar Control: Selected ShatterGARD films provide significant reductions in ultraviolet, infrared, and visible spectrum transmissions that can be tailored to the needs of individual installations. Many solar films can also provide a full range of safety and security protection.
- Ballistic Resistance: Results of ballistic testing by H.P. White Laboratories, Inc. are available on the ShatterGARD website. Use of applied film is a cost-effective means of enhancing the ballistic resistance of existing glazing and may reduce the overall glazing thickness required for new security installations.
- Blast Resistance: Results of testing of units glazed with security and safety glazing film and tested by WBE Engineering in actual controlled blast circumstances are available on ShatterGARD's website. Tests indicate the degree to which glass shards are prevented from becoming projectiles in occupied areas. Custom test utilizes ASTM F1642 as a preparation guideline, and utilizes current standard of the British Explosion Effects Branch, Safety and Facilities Establishment, Department of Environment, for evaluating results of testing.
- Museum-Grade Clarity: ShatterGard's UVGARD provides sensitive areas such as exhibit spaces with 98 percent UV protection while maintaining clear optical properties, while offering the same protective benefits of ShatterGARD.

A. Security and safety glazing film applied to [existing glazing] [as part of fabricated glazing units specified in other sections] [as part of manufactured window units specified in other sections].

1.02 RELATED SECTIONS

- A. Section 08410 Aluminum Entrances and Storefronts.
- B. Section 08[___] [Aluminum] [Wood] [Vinyl] Windows.
- C. Section 08800 Glazing.
- D. Section 08950 Glazed Aluminum Curtain Walls.

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM) D4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
- B. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
- D. ASTM F1642 Standard Test Method for Glazing and Glazing Systems Subject to Airblast Loadings
- E. American National Standards Institute (ANSI): ANSI Z97.1(CPSC 1201) Safety Glazing Materials Used In Buildings.
- F. H. P. White Laboratory, Inc., Ballistic Resistance Test HPW-TP-0500.02.
- G. WBE Engineering, Inc., Test Program for Evaluation of Filmed Windows Subjected to Blast Loads, Test Report 817-001.

1.04 SUBMITTALS

- A. Product Data, including certified third-party test data indicating compliance with specified requirements, and provider's recommended installation procedures.
- B. Samples for Selection: Full range of available tinted film colors.
- C. Fabricator/applicator qualifications as required by Quality Assurance article.
- D. Provider's sample warranty.
- E. Maintenance and cleaning instructions.

1.06 WARRANTY

Specifier's Note: ShatterGARD offers a limited life of installation warranty against adhesive failure, film discoloration or distortion, peeling and delamination, for material installed by approved applicators. ShatterGARD will re-film any ShatterGARD-treated glazing units that are intentionally broken at no cost to the Owner. Contact ShatterGARD for warranty details.

A. Provide provider's standard limited warranty, covering replacement film materials and film installation labor, against adhesive failure, film discoloration and distortion, peeling or delamination, and on film-protected units that are intentionally broken, for the life of the installation.

2.01 SECURITY AND SAFETY GLAZING FILM

A. ShatterGARD, Inc., 8351 Roswell Road Suite 391, Atlanta, GA 30350; Voice: (888) 306-7998; Fax: (888) 646-8913; Email: jordan@shattergard.com; Website: <http://www.shattergard.com/>.

Select Security and Safety Glazing Films or Solar Control Security and Safety Glazing Films below as required for project. Select one of four standard film thicknesses based upon ShatterGARD's recommendations following analysis of glass opening safety/security risk exposure. Edit the remaining optional characteristics to correspond to the film thickness selected. Custom thicknesses are available; consult ShatterGARD.

- SafetyGARD: .006 inch (0.15 mm): Approved by OSHA and USDA for application to conventional glass where safety glazing is required. Prevents fragmentation of glass due to impact. Also used for retail display and showcases.
- StormGARD 9: .009 inch (1.23 mm) film: Medium threat storm window protection concerns: High wind loads and airborne debris.
- StormGARD 12: .012 inch (0.30 mm) film: High threat storm related window protection concerns. Resists damage from hailstorms, high wind, hurricanes etc.
- BurglarGARD 9: .009 inch (1.23 mm) film: Medium threat security protection: Burglaries, home invasions, smash and grab crimes, or impact via a rock, baseball bat or hammer.
- BurglarGARD 12: .012 inch (0.30 mm) film: High threat security window protection concerns. Resists attack from pellet gun, rocks and cinder blocks.
- BlastGARD 9: .009 inch (1.19 mm) film: GSA approved fragment retention window protection. Concerns: Minor ballistic, industrial explosion, bomb blasts. Protect occupants from flying glass.
- UVGARD 2, 6, 9, 12: Same security and safety specifications as above films, while effectively reducing UV penetration by 98 percent and maintaining **optimally clear visual characteristics**
- Exterior Restoration Film: Certain ShatterGARD films may also be used as an exterior application to restore surfaces of glass units damaged by environmental chemicals.
- Custom films: Other film thicknesses and applications are available from ShatterGARD. Contact the provider for additional information.
- Double layer application: Two layers of any of the above films can be applied to a single glazed opening to double the strength. 2 layers of .015 in. film provides .030 in. film protection.

1. Approved Security and Safety Glazing Film Product: [StormGARD [9] [12] [BurglarGARD [9] [12]] [BlastGARD 9] UVGARD [insert film thickness]].

B. Substitutions: No substitutions allowed.

2.02 MATERIALS

Specifier's Note: ShatterGARD Security and Safety Glazing Films and Solar Control Security and Safety Glazing Films utilize a specialty pressure-sensitive acrylic adhesive backing. The film and adhesive composite resists weathering, temperature-induced distortion and discoloration from UV.

ShatterGARD Security and Safety Glazing Films installed on glass units by an authorized technician will absorb a significant amount of kinetic energy when that glass is subjected to impact or shock wave. ShatterGARD films decrease the likelihood of glass shattering. In the unlikely event the glass should break, ShatterGARD film will help hold all of the broken glass within the frame, preventing penetration and greatly reducing collateral damage from flying glass fragments.

A. Security and Safety Glazing Film: Optically clear, tear-resistant, penetration-resistant, and abrasion-resistant polyester film with pressure-sensitive adhesive, complying with the following:

1. Film thickness: [insert film thickness required].

Specifier's Note: Select applicable puncture resistance below for thickness of film selected; puncture resistances listed below correspond to the four standard thicknesses listed in the Specifier's Note under 2.02 above:

2. Puncture resistance per ASTM D4830: [71 lbf (316 N)] [142 lbf (632 N)] [185 lbf (823 N)] [232 lbf (1032 N)] average.
3. Visible Light Transmittance (film only): 85 percent.
4. Total Ultraviolet Rejected (film only): 99 percent.
5. Total Solar Energy Rejected (film only): 21 percent.

Specifier's Note: Paragraph below specifies ShatterGARD Solar Control Security and Safety Glazing Film for applications where reduced glare, UV-protection, and solar heat control are desired without altering visible characteristics of underlying glazing. Note that Solar Control film has identical strength characteristics to clear film above.

B. Tinted Solar Control Security and Safety Glazing Film: Slight grey-tinted, solar absorbing, tear-resistant, penetration-resistant polyester film with pressure-sensitive adhesive, complying with the following properties for film only:

1. Color: Grey Steel 140.
2. Film thickness: [insert film thickness required].

Specifier's Note: Select applicable puncture resistance below for thickness of film selected; puncture resistances listed below correspond to the four standard thicknesses listed in the Specifier's Note under 2.02 above:

3. Puncture resistance per ASTM D4830: [71 lbf (316 N)] [142 lbf (632 N)] [185 lbf (823 N)] [232 lbf (1032 N)] average.
4. Solar Transmittance: 53 percent.
5. Solar Absorptance: 37 percent.
6. Solar Reflectance: 10 percent.
7. Visible Light Transmittance: 56 percent.
8. Visible Light Absorptance: 33 percent.
9. Visible Light Reflectance: 11 percent.
10. Emissivity: .89.
11. Shading Coefficient: .73.
12. Total Ultraviolet Rejected: 98 percent.
13. Total Solar Energy Rejected: 36 percent.

Specifier's Note: Paragraph below specifies ShatterGARD Reflective Solar Control Security and Safety Glazing Film for applications where greatly reduced glare, vision control glass, UV-protection, and daylight control are desired. Note that Solar Control film has identical strength characteristics to clear film. Below product offers one-way reflective vision characteristics under certain ambient lighting conditions.

C. Reflective Solar Control Security and Safety Glazing Film: Tinted, solar absorbing, tear-resistant, penetration-resistant polyester film with pressure-sensitive adhesive, complying with the following properties for film only:

1. Color: Chrome 80.
2. Characteristics: Mirror or chrome reflective finish. [One-way reflective vision characteristics.]
3. Film thickness: [insert film thickness required].

Specifier's Note: Select applicable puncture resistance below for thickness of film selected; puncture resistances listed below correspond to the four standard thicknesses listed in the Specifier's Note under 2.02 above:

4. Puncture resistance per ASTM D4830: [71 lbf (316 N)] [142 lbf (632 N)] [185 lbf (823 N)] [232 lbf (1032 N)] average.
5. Solar Transmittance: 11 percent.
6. Solar Absorptance: 40 percent.
7. Solar Reflectance: 49 percent.
8. Visible Light Transmittance: 15 percent.
9. Visible Light Absorptance: 33 percent.
10. Visible Light Reflectance: 52 percent.
11. Emissivity: .82.
12. Shading Coefficient: .26.
13. Total Ultraviolet Rejected: 99 percent.
14. Total Solar Energy Rejected: 77 percent.

Specifier's Note: This specification is written assuming field application on existing glass units. For in-shop fabrication specification, select the applicable preparation and application requirements from Part 3 and insert here under article titled FABRICATION.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine glazing surfaces to receive security and safety glazing film application. Report conditions detrimental to application of film in writing to Architect. Do not apply film to substrates until approved.

3.02 PREPARATION

A. Clean glass substrates in accordance with provider's instructions. Test substrate after cleaning for adhesion when recommended.

3.03 APPLICATION

A. Install security and safety glazing film to [interior side of inboard glass lite] [exterior side of exterior glass lite] on glazing units indicated.

B. Apply security and safety glazing film in strict accordance with written architectural specification. Apply film to prepared glass surface, ensuring complete adhesion of film.

C. Film Edge Condition: Apply film with edge condition indicated.

1. Apply film to daylight glass opening, from stop to stop. Trim film neatly at perimeter within 1/8 inch of gasket or frame.

3.04 CLEANING AND PROTECTION

Specifier's Note: ShatterGARD application requires up to 90 days curing time. Prior to curing, the film's adhesive substrate may exhibit small bubble formation from trapped moisture, which disappears upon full cure.

A. Do not disturb or clean film for minimum 30-45 days following application. Delay cleaning film until bubbles of temporarily trapped moisture are no longer visible behind film.

B. Clean film in accordance with provider's instructions. Leave film and adjoining finishes free of fingerprints, adhesive, or other surface blemish resulting from this application.

C. Protect film from damage due to construction operations.