SECTION 08 88 56

SECURITY WINDOW FILM

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\*\* NOTE TO SPECIFIER \*\* Invisicade, LLC: Security Window Film.  
This section is based on the products of Invisicade which is located at:  
12810A Century Drive.  
Stafford, TX 77477.  
Phone: 800-942-2215.  
Email: info@inviscade.  
Web: www.invisicade.com.  
[Click Here] for additional information.  
Invisicade Crisis Shield CS-650 combines exceptional engineering with a commitment to glazing security ensuring that facilities remain secure, efficient, and compliant with the latest standards.  
In response to rising retail crime, forced entry incidents, and mass casualty events involving glazing, applied security glazing retrofits needed to have increasing levels of break strength and other physical properties to meet increasing threat levels and testing standards, Crisis Shield CS-650, a high-performance security laminate developed by a globally recognized manufacturer, was introduced as the thickest and strongest such manufactured product to meet those needs. Initially marketed under a different name, it has been installed on over 700,000 sq ft of glazing in U.S. education, retail, and commercial sectors. After the original partnership ended, Viscera Brands secured exclusive U.S. rights, rebranded it as Crisis Shield CS-650, and conducted rigorous testing to showcase its capabilities. Today, it is distributed nationwide through NGS, the nation's leading retrofit glazing security contractor.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Safety window film for blast mitigation, forced entry and energy efficiency.
       1. Doors, windows, aluminum framed storefront and building curtainwall.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Division 08 - Openings specification sections for glazed openings with security window film.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. American Society for Testing and Materials (ASTM):
       1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
       2. ASTM F3561: Standard Test Method for Forced Entry Resistance of Window Film Materials.
       3. ASTM F1642: Standard Test Method for Glazing and Window Systems Subject to Airblast Weapons Effects.
       4. ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
       5. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
       6. ASTM E1886: Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
       7. ASTM E1996: Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
       8. ASTM E283: Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Assembly.
    2. American National Standards Institute (ANSI):
       1. ANSI Z97.1: Safety Glazing Materials Used in Buildings.
    3. US General Services Administration (GSA):
       1. US General Services Administration Standard GSA-TS01.
    4. Underwriters Laboratories (UL):
       1. UL 972: Burglary Resisting Glazing Material.
    5. Canadian General Standards Board (CGSB):
       1. CAN/CGSB 12.1: Safety Glazing.
    6. Consumer Product Safety Commission (CPSC):
       1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials.
    7. Texas Department of Insurance (TAS):
       1. TAS 201: Impact Test Procedures For Use On Exterior Windows and Door Assemblies.
       2. TAS 202: Criteria For Testing Impact & Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure.
       3. TAS 203: Criteria For Testing Products Subject to Cyclic Wind Pressure Loading.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Verification Samples: Two representative units of each type, size, pattern, and color.
    2. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum of five years documented experience.
     2. Installer Qualifications: Company certified by Invisicade, LLC for installation of Crisis Shield CS-650 window film.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. The intent of a mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If the mock-up is not acceptable, rebuild the mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
  3. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
  4. WARRANTY
     1. Manufacturer's warranty: One year.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Invisicade, which is located at:12810 A Century Dr.Stafford, TX 77477Toll Free Tel: 800-942-2215Email: [request info (info@aspire.film)](https://arcat.com/rfi?action=email&company=Invisicade&message=RE%253A%2520Spec%2520Question%2520(08840asp)%253A%2520&coid=54381&spec=08840asp&rep=&fax=);Web: <https://www.invisicade.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with the provisions of Section 01 60 00.
  1. PERFORMANCE AND DESIGN REQUIREMENTS
     1. Blast and Overpressure Resistance:
        1. ASTM F1642: Glazing materials shall meet the performance criteria outlined in ASTM F1642 for resistance to blast and overpressure.
        2. GSA-TS01: US General Services Administration Standard: Glazing materials shall comply with the GSA-TS01 standard for blast and overpressure as set by the US General Services Administration.
     2. Simulated Active Shooter/Forced Entry Resistance:
        1. ASTM F3561, Level 1 Passed: Glazing shall demonstrate resistance to forced entry and simulated active shooter attacks, having achieved Level 1 certification in accordance with ASTM F3561. The Crisis Shield CS-650 safety window film has been third party lab tested and has passed level one.
     3. Storm and Debris Protection:
        1. ASTM E330: Glazing: tested in accordance with ASTM E330 to determine structural performance under uniform static air pressure difference.
        2. ASTM E331: Glazing shall conform to ASTM E331 for water penetration.
        3. ASTM E1886: Glazing systems shall meet the requirements of ASTM E1886 for performance under missile impact and cyclic wind pressure.
        4. ASTM E1996: Glazing shall adhere to ASTM E1996 standards for impact resistance during windborne debris events (e.g., hurricanes).
        5. ASTM E283: Glazing shall comply with ASTM E283 standards for determining the rate of air leakage through exterior windows, curtain walls, and doors under specified pressure differences.
        6. TAS 201: Glazing shall meet the requirements of TAS 201 for the impact resistance of building envelope components using hard body missile impact.
        7. TAS 202: Glazing shall conform to TAS 202 standards for criteria for testing impact resistance of building envelope components using a large missile impact.
        8. TAS 203: Glazing shall adhere to TAS 203 for criteria for testing products subject to cyclic pressure loading.
     4. Safety Glazing:
        1. ANSI Z97.1 (estimated February 2025): Glazing materials must meet the safety requirements defined in ANSI Z97.1 for use in buildings.
        2. CAN/CGSB 12.1 (estimated February 2025): Glazing shall comply with CAN/CGSB 12.1 standards for safety glazing.
        3. CPSC 16 CFR 1201 (estimated February 2025): Glazing shall conform to CPSC 16 CFR 1201, the safety standard for architectural glazing materials.
     5. Burglary Resistance:
        1. UL 972 (estimated February 2025): Glazing materials shall meet the requirements of UL 972 for burglary resisting glazing.

\*\* NOTE TO SPECIFIER \*\* Delete article not required.

* 1. SAFETY WINDOW FILM
     1. Basis of Design: Crisis Shield CS-650 Safety Window Film.
        1. Performance and Design Requirements.
           1. Performance Requirements:

Physical Properties:

Thickness: 650 micrometers.

Solar Performance Properties:

Visible Light Transmitted: 86 percent.

Visible Light Reflected (int): 11 percent.

Visible Light Reflected (ext): 11 percent.

UV Rejection: greater than 99 percent.

Total Solar Energy Transmitted: 78 percent.

Total Solar Energy Reflected: 10 percent.

Total Solar Energy Absorbed: 12 percent.

Shading Coefficient: 0.93.

Total Solar Energy Rejected: 20 percent.

Glare Reduction: 4 percent.

U-Factor: 1.07.

Light to Solar Gain: 1.052.

Solar Heat Gain Coefficient: 0.80.

Haze (ASTM D1003): less than 4 percent.

Surface Burning Characteristics (ASTM E84): Est. 2/2025.

Impact Resistance for Safety Glazing:

Break Strength (TD) (ASTM D882): 655 lbs per inch (11.7 kg per mm).

Puncture Strength (ASTM D4830): 325 lbs (147.5 kg).

Tear Resistance (ASTM D1004): 310 N/m.

Peel Strength (ASTM D3330): 8 lbs per inch (0.2 kg per mm).

Elongation at Break (TD) (ASTM D882): 90.

Tensile Strength @ Break (TD) (ASTM D882): 32,000 psi.

Blast and Overpressure: ASTM F1642 and US General Services Administration Standard.

Simulated Active Shooter (IntertekForced Entry, ASTM F3561): Level 1 Passed.

Burglary Resisting Glazing Material (UL 972): Est. 2/2025.

Safety Glazing (Est. 2/2025): ANSI Z97.1, CAN/CGSB 12.1, and CPSC 16 CFR 1201.

Storm and Debris (Est. 3/2025): ASTM E330, ASTM E331, ASTM E1886, ASTM E1996, ASTM E283, TAS 201, TAS 202, and TAS 203.

1. EXECUTION
   1. EXAMINATION
      1. Examine glass surfaces to receive new film and verify that they are free from defects and imperfections, which will affect the final appearance. Correct all such deficiencies before starting film application.
   2. PREPARATION
      1. Clean window and window framing thoroughly with a neutral cleaning solution. Scrape inside surface of the window glass with stainless steel razor blades with clean, sharp edges to remove any foreign contaminants without damaging the glass surface.
      2. Place drop cloths or other absorbent material on windowsill or sash to absorb moisture accumulation generated by the film application.
   3. INSTALLATION
      1. Authorized Dealer/Applicator to apply window film per manufacturer's written instructions and per approved submittals.
      2. Deliver window film materials to the job site with the manufacturer's labels intact and legible.
      3. Cut window film to specification utilizing a vertical dispenser designed for that purpose. Film edges shall be cut neatly and square at a uniform distance of 1/8" (3 mm) to 1/16" (1.6 mm) of the window-sealing device.
      4. Wet-apply window film using clean water and slip solution to facilitate positioning of the film onto glass.
      5. Use polyplastic bladed squeegee to remove excess water from the underside of the film and to maximize bonding of the pressure sensitive adhesive.
      6. Upon completion, window film may have a dimpled appearance from residual moisture. Moisture shall, under reasonable weather conditions, dry flat with no moisture dimples within a period of 30 calendar days when viewed under normal viewing conditions.
      7. Protect window film before, during and after installation.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* 1. FIELD QUALITY CONTROL
     1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.
     2. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  2. CLEANING AND PROTECTION
     1. Window film may be washed using common window cleaning solutions, including ammonia solutions, 30 days after application. Synthetic sponges or soft cloths are recommended. Do not use abrasive type cleaning agents and bristle brushes, which can scratch the window film.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION