SECTION 08 87 00

GLAZING SURFACE FILMS

Display hidden notes to specifier. (Don't know how? [Click Here](https://www.arcat.com/sd/display_hidden_notes.shtml))

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\*\* NOTE TO SPECIFIER \*\* Avery Dennison Graphic Solutions; Architectural window films.  
This section is based on the products of Avery Dennison Graphic Solutions, which is located at:8080 Norton Pkwy. Mentor, OH 44060Toll Free Tel: 800-348-9875Tel: 440-534-6000Email: [request info (kate.stewart@averydennison.com)](https://arcat.com/rfi?action=email&company=Avery%252BDennison%252BGraphic%252BSolutions&message=RE%253A%2520Spec%2520Question%2520(08870avd)%253A%2520&coid=44344&spec=08870avd&rep=&fax=)  
Web: <https://graphics.averydennison.com/en/home/graphics-products/window-films/architectural-window-films.html>   
 [ [Click Here](https://arcat.com/company/avery-dennison-graphic-solutions-44344) ] for additional information.  
Architects and designers who adorn or restyle building interiors need materials that can enhance aesthetics and ambiance or add privacy to an office space, as well as temporary or permanent display mediums that can lead people to a destination or deliver a clear message.  
Avery Dennison offers a complete range of high-quality, conformable architectural adhesive films that can safeguard surfaces and enhance the appearance and experience of any building.

1. GENERAL
   1. SECTION INCLUDES

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

* + 1. Window Films:
       1. Decorative.
       2. Dual reflective window films.
       3. Modular series window films.
       4. Neutral window films.
       5. Reflective.
       6. Safety and security.
       7. Solar safety.
       8. Spectrally selective.
       9. Vela.
       10. Bird deterrent.
  1. RELATED SECTIONS

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

* + 1. Section 08 54 13 - Fiberglass Windows.
    2. Section 08 60 00 - Roof Windows and Skylights.
    3. Section 08 83 13 - Mirrored Glass Glazing.
    4. Section 08 44 23 - Structural Sealant Glazed Curtain Wall.
  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 National Standards Institute (ANSI):
       1. ANSI Z97.1 American National Standard for Safety Glazing Materials Used in Buildings.
    2. ASTM International (ASTM):
       1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
       2. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
       3. ASTM D1044 - Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion by the Taber Abraser.
       4. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.
    3. Australian/New Zealand Standard (AS/NZS):
       1. AS/NZS 2208 - Safety Glazing Materials in Buildings.
    4. British Standards (BS):
       1. BS 476 - Fire Tests.
       2. BS 6206 - Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings.
    5. Consumer Product Safety Commission (CPSC):
       1. CPSC 1201 - Safety Standard for Architectural Glazing Materials.
    6. Deutsches Institut fUr Normung (DIN): German Standards Organization.
       1. DIN 52290 - Security Glazing; Testing of the Resistance against Explosive Effect and Classification.
    7. Europaische Norm (EN): European Standards.
       1. EN 12600 - Glass in building - Pendulum test - Impact test method and classification for flat glass.
       2. EN 356 - Intruder Resistance.
    8. Federal Motor Vehicle Safety Standards (FMVSS):
       1. FMVSS 302 - Flammability of Automotive Materials.
    9. Florida Building Code:
       1. Dade County Small Missile Test, TAS 201, 202, 203,
    10. Underwriters Laboratories (UL):
        1. UL 972 - DIN 52290 Part 4, A1.
  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 applicable to product type.

* + 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 specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
     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 standard limited warranty unless indicated otherwise.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Avery Dennison Graphic Solutions, which is located at:8080 Norton Pkwy. Mentor, OH 44060Toll Free Tel: 800-348-9875Tel: 440-534-6000Email: [request info (kate.stewart@averydennison.com)](https://arcat.com/rfi?action=email&company=Avery%252BDennison%252BGraphic%252BSolutions&message=RE%253A%2520Spec%2520Question%2520(08870avd)%253A%2520&coid=44344&spec=08870avd&rep=&fax=);Web: <https://graphics.averydennison.com/en/home/graphics-products/window-films/architectural-window-films.html>

\*\* 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.

\*\* NOTE TO SPECIFIER \*\* Take advantage of windows as an opportunity for branding and design with window films solutions including privacy films, clear digitally printable films and plotter cut films. Use windows for long-term wayfinding signage or even short-term promotional graphics. Delete article if not required.

* 1. DECORATIVE WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete basis of design options not required.

* + 1. Basis of Design: SC900 Super Cast Series. Decorative specialty cast vinyl window film. Provides the look of etched glass eliminating the need for sandblasting.
       1. Film: General.
          1. Dimensional Stability: Less than 0.015 inches (0.38 mm).
          2. Elongation: 100 percent minimum.
          3. Flammability per FMVSS302 and ASTM E84: Self Extinguishing Class 1 or A rating.
          4. Shelf-Life Stored at 68 to 77 degrees F (20 to 25 degrees C) and Relative Humidity of 45 to 55 percent: 2 years from date of manufacture.
          5. Durability, Vertical Exposure: Reference charts in the Technical Data Sheet.
          6. Minimum Application Temperature: 40 degrees F (4 degrees C).
          7. Service Temperature: 50 to180 degrees F (-45 to 82 degrees C).
          8. Chemical Resistance: Resistant to most mild acids, alkalis, and salt solutions.

\*\* NOTE TO SPECIFIER \*\* Delete film options not required.

* + - 1. Film: Etchmark. Permanent.
         1. Caliper: Face: 2.1 mil (53 &#181;m). Adhesive: 1.0 mil (25 &#181;m).
         2. Tensile at Yield: 4.0 to 9.0 lbs per inch (0.7 to 1.6 kg per cm).
         3. Hunter Gloss at 60 degrees F: 15 to 30 GU.
         4. Adhesion: To stainless steel.

15 Min: 2.5 lbs per inch (538 N per m). 24 Hrs: 3.6 lbs per inch (630 N per m).

* + - * 1. Light Transmission Values: 900 to 861, equal or greater to 70 percent.
      1. Film: Frosted Sparkle. Permanent.
         1. Caliper: Face: 2.1 mil (53 &#181;m). Adhesive: 1.0 mil (25 &#181;m).
         2. Tensile at Yield: 4.0 to 9.0 lbs per inch (0.7 to 1.6 kg per cm).
         3. Hunter Gloss at 60 degrees F: 15 to 30 GU.
         4. Adhesion: To stainless steel.

15 Min: 2.5 lbs per inch (538 N per m). 24 Hrs: 3.6 lbs per inch (630N per m).

* + - * 1. Light Transmission Values: 900 to 862, approximately equal to 65 percent.
      1. Film: Dusted Crystals. Removable.
         1. Caliper: Face: 2.4 mil (61 &#181;m). Adhesive: 0.85 mil (22 &#181;m).
         2. Tensile at Yield: 2.5 to 3.5 lbs per inch (0.4 to 0.6 kg per cm).
         3. Hunter Gloss at 60 degrees F: Luster: 20 GU. Matte: 3.2 GU.
         4. Adhesion: To stainless steel. 15 Min: .8 lbs per inch (140 N per m) 1.0 lbs per inch (175 N per m).
         5. Light Transmission Values:

Luster: 900 to 866, approximately equal to 91.5 percent.

Matte: 900 to 867, approximately equal to 88.4 percent.

* + 1. Basis of Design: MPI 1060 Gloss Transparent Films. A premium quality, flexible, high gloss conformable vinyl film for use in architectural, transportation, and general signage markings.
       1. Caliper: Face: 2.1 mil (53 &#181;m). Adhesive: 1.0 mil (25 &#181;m).

\*\* NOTE TO SPECIFIER \*\* Ink loads in excess of 250% may cause increased shrinkage and/or increased initial adhesion of the printed film

* + - 1. Dimensional Stability: Less than 0.015 inches (0.38 mm).
      2. Tensile at Yield: 4.0 to 8.0 lbs per inch (0.7 to 1.5 kg per cm).
      3. Elongation: 100 percent minimum.
      4. Hunter Gloss at 60 degrees F: 90 GU.
      5. Adhesion: No. 90 StaFlat (Smooth).
         1. 15 Min: 3.0 lbs per inch (525 N per m). 24 Hrs: 4 lbs per inch (700 N per m).
      6. Flammability: Self-extinguishing.
      7. Shelf-Life Stored at 68 to 77 degrees F (20 to 25 degrees C) and Relative Humidity of 45 to 55 percent: 2 years from date of manufacture.
      8. Durability, Vertical Exposure: Up to 5 years.
      9. Minimum Application Temperature: 40 degrees F (4 degrees C).
      10. Service Temperature: -40 to180 degrees F(-40 to 82 degrees C).
      11. Chemical Resistance: Resistant to most mild acids, alkalis, and salt solutions.
    1. Basis of Design: SF 100 Polyester High Gloss Films. Environmentally responsible alternative to PVC films. Top coated for print receptivity. A strong tear resistant surface.

\*\* NOTE TO SPECIFIER \*\* Delete face option not required.

* + - 1. Face: Clear.
         1. Caliper, Face:

SF100-841-S Metallized Brushed Chrome: 1.0 mil (25 &#181;m).

SF100-846-S Metallized Chrome Mirror: 1.0 mil (25 &#181;m).

SF100-103-S Clear: 2.0 mil (50 &#181;m).

SF100-242-S Metallized Brushed Gold: 2.0 mil (50 &#181;m).

SF100-247-S Double Gold: 2.0 mil (50 &#181;m).

SF100-248-S Gold Mirror: 2.0 mil (50 &#181;m).

* + - * 1. Caliper, Adhesive: 1.0 mil (25 &#181;m).
        2. Dimensional Stability: Less than 0.015 inches (0.38 mm).
        3. Tensile at Yield: N/A.
        4. Elongation: N/A.
        5. Hunter Gloss at 60 degrees F: 90 GU.
        6. Adhesion: 15 Min: 3.0 lbs per inch (525 N per m). 24 Hrs: 4 lbs per inch (700 N per m).
        7. Flammability: Self-extinguishing.
        8. Shelf-Life Stored at 68 to 77 degrees F (20 to 25 degrees C) and Relative Humidity of 45 to 55 percent: 1 year from date of manufacture.
        9. Durability, Vertical Exposure: Reference charts in the Technical Data Sheet.
        10. Minimum Application Temperature: 40 degrees F (4 degrees C).
        11. Service Temperature: -40 to 257 degrees F (-40 to 125 degrees C).
        12. Chemical Resistance: Resistant to most mild acids, alkalis, and salt solutions.
        13. Compliance: California Proposition 65.
      1. Face: Ultraclear.
         1. Caliper: Face: 2.0 mil (51 &#181;m). Adhesive: 1.0 mil (25 &#181;m).
         2. Dimensional Stability: Less than 0.015 inches (0.38 mm).
         3. Tensile at Yield: N/A.
         4. Elongation: N/A.
         5. Hunter Gloss at 60 degrees F: 90 GU.
         6. Adhesion: 15 Min: 1.0 lbs per inch (175 N per m). 24 Hrs: 1.5 lbs per inch (262 N per m).
         7. Flammability: Self-extinguishing.
         8. Shelf-Life Stored at 68 to 77 degrees F (20 to 25 degrees C) and Relative Humidity of 45 to 55 percent: 2 years from date of manufacture.
         9. Durability, Vertical Exposure: Outdoor: Up to 2 years. Indoor: Up to 5 years.
         10. Minimum Application Temperature: 50 degrees F (10 degrees C).
         11. Service Temperature: -40 to 180 degrees F (-40 to 82 degrees C).
         12. Chemical Resistance: Resistant to most mild acids, alkalis, and salt solutions.
         13. Compliance: California Proposition 65.

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

* 1. DUAL REFLECTIVE WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete interior or exterior paragraph. Whichever is not required.

* + 1. Interior:

\*\* NOTE TO SPECIFIER \*\* Delete basis of design option not required, then delete the film options not required.

* + - 1. Basis of Design: DR Optitune i: High solar heat rejection with low internal reflectance. Residential and commercial use. DR OptiTune 05i, the group's darkest version, functions as a one-way mirror for outstanding daytime privacy.
         1. Film: DR OptiTune 05i:

Visible Light Transmitted: Single: 6 percent. Double: 6 percent.

Visible Light Reflected:

Interior: Single: 15 percent. Double: 15 percent.

Exterior: Single: 63 percent. Double: 63 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 56 percent. Double: 50 percent.

Transmitted: Single: 6 percent. Double: 6 percent.

Absorbed: Single: 38 percent. Double: 44 percent.

Emissivity (Room Side): Single: 0.75. Double: 0.75.

Glare Reduction: Single: 93 percent. Double: 93 percent.

Selective InfraRed Reduction: Single: 94 percent. Double: 94 percent.

InfraRed Energy Rejection: Single: 82 percent. Double: 82 percent.

Shading Coefficient: Single: 0.19. Double: 0.31.

Solar Heat Gain Coeff. (G-Value): Single: 0.16. Double: 0.27.

U-Value Winter (IP) : Single: 0.99. Double: 0.47.

U-Value Winter (SI) : Single: 5.62. Double: 2.66.

Luminous Efficacy: Single: 32. Double: 19.

Total Solar Energy Rejected: Single: 84 percent. Double: 73 percent.

* + - * 1. Film: DR OptiTune 15i:

Visible Light Transmitted: Single: 13 percent. Double: 13 percent.

Visible Light Reflected:

Interior: Single: 25 percent. Double: 24 percent.

Exterior: Single: 56 percent. Double: 56 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 51 percent. Double: 46 percent.

Transmitted: Single: 12 percent. Double: 11 percent.

Absorbed: Single: 37 percent. Double: 43 percent.

Emissivity (Room Side): Single: 0.76. Double: 0.76.

Glare Reduction: Single: 85 percent. Double: 85 percent.

Selective InfraRed Reduction: Single: 88 percent. Double: 88 percent.

InfraRed Energy Rejection: Single: 77 percent. Double: 77 percent.

Shading Coefficient: Single: 0.26. Double: 0.37.

Solar Heat Gain Coeff. (G-Value): Single: 0.22 Double: 0.32.

U-Value Winter (IP) : Single: 1.00. Double: 0.47.

U-Value Winter (SI) : Single: 5.68. Double: 2.67.

Luminous Efficacy: Single: 0.50. Double: 0.34.

Total Solar Energy Rejected: Single: 78 percent. Double: 68 percent.

* + - * 1. Film: DR OptiTune 20i:

Visible Light Transmitted: Single: 21 percent. Double: 19 percent.

Visible Light Reflected:

Interior: Single: 15 percent. Double: 15 percent.

Exterior: Single: 32 percent. Double: 35 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 31 percent. Double: 31 percent.

Transmitted: Single: 18 percent. Double: 16 percent.

Absorbed: Single: 51 percent. Double: 53 percent.

Emissivity (Room Side): Single: 0.80 Double: 0.80

Glare Reduction: Single: 77 percent. Double: 76 percent.

Selective InfraRed Reduction: Single: 83 percent. Double: 83 percent.

InfraRed Energy Rejection: Single: 68 percent. Double: 68 percent.

Shading Coefficient: Single: 0.38. Double: 0.51.

Solar Heat Gain Coeff. (G-Value): Single: 0.33. Double: 0.44.

U-Value Winter (IP) : Single: 1.02. Double: 0.48.

U-Value Winter (SI) : Single: 5.79. Double: 2.70.

Luminous Efficacy: Single: 0.55. Double: 0.38.

Total Solar Energy Rejected: Single: 67 percent. Double: 56 percent.

* + - * 1. Film: DR OptiTune 30i:

Visible Light Transmitted: Single: 32 percent. Double: 30 percent.

Visible Light Reflected:

Interior: Single: 26 percent. Double: 27 percent.

Exterior: Single: 32 percent. Double: 36 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 32 percent. Double: 31 percent.

Transmitted: Single: 25 percent. Double: 22 percent.

Absorbed: Single: 43 percent. Double: 47 percent.

Emissivity (Room Side): Single: 0.81. Double: 0.81.

Glare Reduction: Single: 63 percent. Double: 63 percent.

Selective InfraRed Reduction: Single: 79 percent. Double: 79 percent.

InfraRed Energy Rejection: Single: 65 percent. Double: 65 percent.

Shading Coefficient: Single: 0.44. Double: 0.53.

Solar Heat Gain Coeff. (G-Value): Single: 037. Double: 0.46.

U-Value Winter (IP) : Single: 1.03. Double: 0.48.

U-Value Winter (SI) : Single: 5.85. Double: 2.71.

Luminous Efficacy: Single: 0.75. Double: 0.57.

Total Solar Energy Rejected: Single: 63 percent. Double: 54 percent.

* + - * 1. Film: DR OptiTune 40i:

Visible Light Transmitted: Single: 41 percent. Double: 38 percent.

Visible Light Reflected:

Interior: Single: 18 percent. Double: 19 percent.

Exterior: Single: 21 percent. Double: 26 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 22 percent. Double: 24 percent.

Transmitted: Single: 33 percent. Double: 29 percent.

Absorbed: Single: 45 percent. Double: 47 percent.

Emissivity (Room Side): Single: 0.83. Double: 0.83.

Glare Reduction: Single: 54 percent. Double: 54 percent.

Selective InfraRed Reduction: Single: 71 percent. Double: 79 percent.

InfraRed Energy Rejection: Single: 57 percent. Double: 65 percent.

Shading Coefficient: Single: 0.54. Double: 0.62.

Solar Heat Gain Coeff. (G-Value): Single: 0.46. Double: 0.54.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.72.

Luminous Efficacy: Single: 0.77. Double: 060.

Total Solar Energy Rejected: Single: 54 percent. Double: 46 percent.

* + - 1. Basis of Design: DR OptiShade i: A warm, neutral earth tone with low interior reflectance, and effective solar heat protection. Ideal for residential use.
         1. Film: DR OptiShade 15i:

Visible Light Transmitted: Single: 16 percent. Double: 15 percent.

Visible Light Reflected:

Interior: Single: 17 percent. Double: 17 percent.

Exterior: Single: 44 percent. Double: 46 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 42 percent. Double: 39 percent.

Transmitted: Single: 13 percent. Double: 11 percent.

Absorbed: Single: 45 percent. Double: 50 percent.

Emissivity (Room Side): Single: 0.79. Double: 0.79.

Glare Reduction: Single: 82 percent. Double: 82 percent.

Selective InfraRed Reduction: Single: 88 percent. Double: 88 percent.

InfraRed Energy Rejection: Single: 74 percent. Double: 74 percent.

Shading Coefficient: Single: 0.31. Double: 0.43.

Solar Heat Gain Coeff. (G-Value): Single: 0.27. Double: 0.38.

U-Value Winter (IP) : Single: 1.01. Double: 0.47.

U-Value Winter (SI) : Single: 5.76. Double: 2.69.

Luminous Efficacy: Single: 052. Double: 0.34.

Total Solar Energy Rejected: Single: 73 percent. Double: 62 percent.

* + - * 1. Film: DR OptiShade 25i:

Visible Light Transmitted: Single: 27 percent. Double: 25 percent.

Visible Light Reflected:

Interior: Single: 14 percent. Double: 14 percent.

Exterior: Single: 25 percent. Double: 30 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 26 percent. Double: 27 percent.

Transmitted: Single: 23 percent. Double: 20 percent.

Absorbed: Single: 51 percent. Double: 53 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 70 percent. Double: 69 percent.

Selective InfraRed Reduction: Single: 78 percent. Double: 78 percent.

InfraRed Energy Rejection: Single: 63 percent. Double: 63 percent.

Shading Coefficient: Single: 0.44. Double: 0.56.

Solar Heat Gain Coeff. (G-Value): Single: 0.39. Double: 0.49.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.61. Double: 0.45.

Total Solar Energy Rejected: Single: 61 percent. Double: 51 percent.

* + - * 1. Film: DR OptiShade 35i:

Visible Light Transmitted: Single: 35 percent. Double: 32 percent.

Visible Light Reflected:

Interior: Single: 10 percent. Double: 11 percent.

Exterior: Single: 13 percent. Double: 20 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 14 percent. Double: 18 percent.

Transmitted: Single: 34 percent. Double: 29 percent.

Absorbed: Single: 53 percent. Double: 53 percent.

Emissivity (Room Side): Single: 0.86. Double: 0.86.

Glare Reduction: Single: 61 percent. Double: 61 percent.

Selective InfraRed Reduction: Single: 65 percent. Double: 65 percent.

InfraRed Energy Rejection: Single: 49 percent. Double: 49 percent.

Shading Coefficient: Single: 0.58. Double: 0.67.

Solar Heat Gain Coeff. (G-Value): Single: 0.50. Double: 0.59.

U-Value Winter (IP) : Single: 1.05. Double: 0.48.

U-Value Winter (SI) : Single: 5.97. Double: 23.75.

Luminous Efficacy: Single: 0.60. Double: 0.47.

Total Solar Energy Rejected: Single: 50 percent. Double: 41 percent.

* + 1. Exterior:

\*\* NOTE TO SPECIFIER \*\* Delete basis of design option not required, then delete the film options not required/

* + - 1. Basis of Design: DR Grey X Series: Combines privacy with interior visibility day and night. Cuts glare up to 92 percent. Available in a variety of VLT's. Suitable for exterior installation on glass glazing systems.
         1. Film: DR Grey 10X:

Visible Light Transmitted: Single: 8 percent. Double: 7 percent.

Visible Light Reflected:

Interior: Single: 17 percent. Double: 23 percent.

Exterior: Single: 55 percent. Double: 55 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 58 percent. Double: 58 percent.

Transmitted: Single: 7 percent. Double: 6 percent.

Absorbed: Single: 35 percent. Double: 36 percent.

Emissivity (Room Side): Single: 0.84 percent. Double: 0.84 percent.

Glare Reduction: Single: 91 percent. Double: 91 percent.

Selective InfraRed Reduction: Single: 93 percent. Double: 93 percent.

InfraRed Energy Rejection: Single: 83 percent. Double: 83 percent.

Shading Coefficient: Single: 0.20. Double: 0.14.

Solar Heat Gain Coeff. (G-Value): Single: 0.17. Double: 0.12.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.40. Double: 0.50.

Total Solar Energy Rejected: Single: 83 percent. Double: 88 percent.

* + - * 1. Film: DR Grey 20X:

Visible Light Transmitted: Single: 19 percent. Double: 18 percent.

Visible Light Reflected:

Interior: Single: 14 percent. Double: 21 percent.

Exterior: Single: 34 percent. Double: 35 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 38 percent. Double: 38 percent.

Transmitted: Single: 18 percent. Double: 15 percent.

Absorbed: Single: 45 percent. Double: 47 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 79 percent. Double: 78 percent.

Selective InfraRed Reduction: Single: 82 percent. Double: 82 percent.

InfraRed Energy Rejection: Single: 70 percent. Double: 70 percent.

Shading Coefficient: Single: 0.36. Double: 0.27.

Solar Heat Gain Coeff. (G-Value): Single: 0.31. Double: 0.23.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.54. Double: 0.66.

Total Solar Energy Rejected: Single: 69 percent. Double: 77 percent.

* + - * 1. Film: DR Grey 35X:

Visible Light Transmitted: Single: 36 percent. Double: 32 percent.

Visible Light Reflected:

Interior: Single: 14 percent. Double: 21 percent.

Exterior: Single: 22 percent. Double: 23 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 26 percent. Double: 27 percent.

Transmitted: Single: 31 percent. Double: 26 percent.

Absorbed: Single: 44 percent. Double: 47 percent.

Emissivity (Room Side): Single: 084. Double: 084.

Glare Reduction: Single: 61 percent. Double: 61 percent.

Selective InfraRed Reduction: Single: 71 percent. Double: 71 percent.

InfraRed Energy Rejection: Single: 58 percent. Double: 58 percent.

Shading Coefficient: Single: 0.50. Double: 0.40.

Solar Heat Gain Coeff. (G-Value): Single: 0.43. Double: 0.35.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.70. Double: 0.80

Total Solar Energy Rejected: Single: 57 percent. Double: 65 percent.

* + - 1. Basis of Design: DR Grey XTRM Series: For exterior installation on glass glazing. Enhances energy efficiency performance and updates a building's appearance.
         1. Film: DR Grey 10XTRM:

Visible Light Transmitted: Single: 10 percent. Double: 10 percent.

Visible Light Reflected:

Interior: Single: 20 percent. Double: 26 percent.

Exterior: Single: 66 percent. Double: 66 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 66 percent. Double: 66 percent.

Transmitted: Single: 7 percent. Double: 6 percent.

Absorbed: Single: 27 percent. Double: 28 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84 percent.

Glare Reduction: Single: 92 percent. Double: 92 percent.

Selective InfraRed Reduction: Single: 94 percent. Double: 94 percent.

InfraRed Energy Rejection: Single: 87 percent. Double: 87 percent.

Shading Coefficient: Single: 0.17. Double: 0.12.

Solar Heat Gain Coeff. (G-Value): Single: 0.15. Double: 0.10.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.41. Double: 0.58.

Total Solar Energy Rejected: Single: 85 percent. Double: 90 percent.

* + - * 1. Film: DR Grey 20XTRM:

Visible Light Transmitted: Single: 20 percent. Double: 18 percent.

Visible Light Reflected:

Interior: Single: 17 percent. Double: 23 percent.

Exterior: Single: 40 percent. Double: 41 percent.

Ultra Violet Block: Single: 99.9. Double: 99.9.

Total Solar Energy:

Reflected: Single: 44 percent. Double: 44 percent.

Transmitted: Single: 17 percent. Double: 15 percent.

Absorbed: Single: 39 percent. Double: 41 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 78 percent. Double: 78 percent.

Selective InfraRed Reduction: Single: 83 percent. Double: 83 percent.

InfraRed Energy Rejection: Single: 73 percent. Double: 73 percent.

Shading Coefficient: Single: 0.33. Double: 0.25.

Solar Heat Gain Coeff. (G-Value): Single: 0.29. Double: 0.22.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.60. Double: 0.72.

Total Solar Energy Rejected: Single: 71 percent. Double: 78 percent.

* + - * 1. Film: DR Grey 35XTRM:

Visible Light Transmitted: Single: 36 percent. Double: 32 percent.

Visible Light Reflected:

Interior: Single: 14 percent. Double: 21 percent.

Exterior: Single: 22 percent. Double: 23 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 25 percent. Double: 27 percent.

Transmitted: Single: 31 percent. Double: 26 percent.

Absorbed: Single: 44 percent. Double: 47 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 61 percent. Double: 61 percent.

Selective InfraRed Reduction: Single: 70 percent. Double: 70 percent.

InfraRed Energy Rejection: Single: 58 percent. Double: 58 percent.

Shading Coefficient: Single: 0.50. Double: 0.40.

Solar Heat Gain Coeff. (G-Value): Single: 0.43. Double: 0.35.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.70. Double: 0.80.

Total Solar Energy Rejected: Single: 57 percent. Double: 65 percent.

\*\* NOTE TO SPECIFIER \*\* Avery Dennison Modular Series Window Films are stackable 2 mil to 12 mil films that can be combined with any Avery Dennison solar window film to create a custom window film solution. Modular series window films are typically used to add protection to window films, with a multiple-layer approach. Delete article if not required.

* 1. MODULAR SERIES WINDOW FILMS
     1. Basis of Design: Modular Poly Clear 2 mil Window Film: Solar protection for polycarbonate or other rigid surfaces. A stackable film to be used in combination with solar window films intended for glass surfaces. Adding Modular Poly Clear 2 mil to polycarbonate surfaces creates a surface which allows solar films to be used on acrylic or polycarbonate windows and skylights. No cure time required when stacking films.
        1. Visible Light Transmitted: 88 percent.
        2. Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.
        3. Glare Reduction: 2 percent.
        4. Total Solar Energy:
           1. Reflected: 80 percent.
           2. Transmitted: 10 percent.
           3. Absorbed: 10 percent.
        5. Shading Coefficient: 0.96.
        6. Solar Heat Gain Coeff.: 0.83.
        7. U-Factor: 1.03.
        8. UV Rejection: Less than 99 percent.
        9. Emissivity: 0.82 percent.
        10. Light to Solar Gain: 1.06
        11. Total Solar Energy Rejected (TSER): 17 percent.
        12. IR Rejection: 22 percent.
        13. InfraRed Energy Rejection: 18 percent.

\*\* NOTE TO SPECIFIER \*\* Avery Dennison Neutral interior window films add a subtle grey appearance to glazing to reduce heat gain and glare while preserving the natural view through the glass. Delete article if not required.

* 1. NEUTRAL WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete basis of design options not required. Then delete film options not required.

* + 1. Basis of Design: NT PerLite Ceramic i: Highly durable, ceramic-based interior window film. Its neutral grey color delivers solar energy rejection, with low visible light reflectance.
       1. Film: NT PerLite Ceramic 20i:
          1. Visible Light Transmitted: Single: 22 percent. Double: 20 percent.
          2. Visible Light Reflected:

Interior: Single: 24 percent. Double: 25 percent.

Exterior: Single: 25 percent. Double: 31 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 29 percent. Double: 29 percent.

Transmitted: Single: 14 percent. Double: 13 percent.

Absorbed: Single: 57 percent. Double: 58 percent.

* + - * 1. Emissivity (Room Side): Single: 0.76 percent. Double: 0.76 percent.
        2. Glare Reduction: Single: 76 percent. Double: 75 percent.
        3. Selective InfraRed Reduction: Single: 91 percent. Double: 91 percent.
        4. InfraRed Energy Rejection: Single: 74 percent. Double: 74 percent.
        5. Shading Coefficient: Single: 0.36. Double: 0.51.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.30. Double: 0.44.
        7. U-Value Winter (IP) : Single: 1.00. Double: 0.47.
        8. U-Value Winter (SI) : Single: 5.68. Double: 2.67.
        9. Luminous Efficacy: Single: 0.62. Double: 0.40.
        10. Total Solar Energy Rejected: Single: 70 percent. Double: 56 percent.
      1. Film: NT PerLite Ceramic 35i:
         1. Visible Light Transmitted: Single: 40 percent. Double: 37 percent.
         2. Visible Light Reflected:

Interior: Single: 15 percent. Double: 16 percent.

Exterior: Single: 17 percent. Double: 23 percent.

* + - * 1. Ultra Violet Block: Single: 90 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 17 percent. Double: 20 percent.

Transmitted: Single: 29 percent. Double: 25 percent.

Absorbed: Single: 54 percent. Double: 55 percent.

* + - * 1. Emissivity (Room Side): Single: 0.82. Double: 0.82.
        2. Glare Reduction: Single: 56 percent. Double: 55 percent.
        3. Selective InfraRed Reduction: Single: 78 percent. Double: 78 percent.
        4. InfraRed Energy Rejection: Single: 60 percent. Double: 60 percent.
        5. Shading Coefficient: Single: 0.52. Double: 0.64.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.45. Double: 0.55.
        7. U-Value Winter (IP) : Single: 1.03. Double: 0.48.
        8. U-Value Winter (SI) : Single: 5.85. Double: 2.72.
        9. Luminous Efficacy: Single: 0.75. Double: 0.57.
        10. Total Solar Energy Rejected: Single: 55 percent. Double: 45 percent.
      1. Film: NT PerLite Ceramic 50i:
         1. Visible Light Transmitted: Single: 51 percent. Double: 47 percent.
         2. Visible Light Reflected:

Interior: Single: 16 percent. Double: 19 percent.

Exterior: Single: 18 percent. Double: 24 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 20 percent. Double: 23 percent.

Transmitted: Single: 40 percent. Double: 35 percent.

Absorbed: Single: 40 percent. Double: 42 percent.

* + - * 1. Emissivity (Room Side): Single: 0.84. Double: 0.84 percent.
        2. Glare Reduction: Single: 43 percent. Double: 42 percent.
        3. Selective InfraRed Reduction: Single: 67 percent. Double: 67 percent.
        4. InfraRed Energy Rejection: Single: 53 percent. Double: 53 percent.
        5. Shading Coefficient: Single: 0.60. Double: 0.66.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.51. Double: 0.57.
        7. U-Value Winter (IP) : Single: 1.04. Double: 0.48.
        8. U-Value Winter (SI) : Single: 5.91. Double: 2.73.
        9. Luminous Efficacy: Single: 0.85. Double: 0.72.
        10. Total Solar Energy Rejected: Single: 49 percent. Double: 43 percent.
      1. Film: NT PerLite Ceramic 70i:
         1. Visible Light Transmitted: Single: 68 percent. Double: 6 percent.
         2. Visible Light Reflected:

Interior: Single: 9 percent. Double: 12 percent.

Exterior: Single: 10 percent. Double: 17 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 10 percent. Double: 15 percent.

Transmitted: Single: 59 percent. Double: 50 percent.

Absorbed: Single: 31 percent. Double: 35 percent.

* + - * 1. Emissivity (Room Side): Single: 0.91. Double: 0.91.
        2. Glare Reduction: Single: 25 percent. Double: 25 percent.
        3. Selective InfraRed Reduction: Single: 44 percent. Double: 44 percent.
        4. InfraRed Energy Rejection: Single: 33 percent. Double: 33 percent.
        5. Shading Coefficient: Single: 0.79. Double: 0.79.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.69. Double: 0.68.
        7. U-Value Winter (IP) : Single: 1.08. Double: 0.49.
        8. U-Value Winter (SI) : Single: 6.13. Double: 2.78.
        9. Luminous Efficacy: Single: 0.86. Double: 0.78.
        10. Total Solar Energy Rejected: Single: 31 percent. Double: 32 percent.
    1. Basis of Design: NT PerLite Ceramic 35 for Safety: Available in thickness of 6 or 10 mil providing protection from a variety of natural and man-made hazards.
       1. Film: NT PerLite Ceramic 35: 6 mil
          1. Visible Light Transmitted: Single: 40 percent. Double: 36 percent.
          2. Visible Light Reflected:

Interior: Single: 16 percent. Double: 18 percent.

Exterior: Single: 18 percent. Double: 24 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 19 percent. Double: 22 percent.

Transmitted: Single: 29 percent. Double: 25 percent.

Absorbed: Single: 52 percent. Double: 53 percent.

* + - * 1. Emissivity (Room Side): Single: 0.90. Double: 0.90.
        2. Glare Reduction: Single: 56 percent. Double: 55 percent.
        3. Selective InfraRed Reduction: Single: 86 percent. Double: 86 percent.
        4. InfraRed Energy Rejection: Single: 69 percent. Double: 69 percent.
        5. Shading Coefficient: Single: 0.52. Double: 0.63.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.44. Double: 54.
        7. U-Value Winter (IP) : Single: 1.07. Double: 0.49.
        8. U-Value Winter (SI) : Single: 6.08. Double: 2.78.
        9. Luminous Efficacy: Single: 0.77. Double: 0.58.
        10. Total Solar Energy Rejected: Single: 56 percent. Double: 46 percent.
        11. Mechanical Properties:

Thickness: 6 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 145 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact Safety Testing: AS/NZS 2208.

* + - 1. Film: NT PerLite Ceramic 35: 10 mil
         1. Visible Light Transmitted: Single: 40 percent. Double: 37 percent.
         2. Visible Light Reflected:

Interior: Single: 17 percent. Double: 18 percent.

Exterior: Single: 17 percent. Double: 23 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 18 percent. Double: 21 percent.

Transmitted: Single: 30 percent. Double: 26 percent.

Absorbed: Single: 52 percent. Double: 53 percent.

* + - * 1. Emissivity (Room Side): Single: 0.91 percent. Double: 0.91 percent.
        2. Glare Reduction: Single: 55 percent. Double: 55 percent.
        3. Selective InfraRed Reduction: Single: 33 percent. Double: 33 percent.
        4. InfraRed Energy Rejection: Single: 26 percent. Double: 26 percent.
        5. Shading Coefficient: Single: 0.53. Double: 0.54.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.46. Double: 0.56.
        7. U-Value Winter (IP) : Single: 1.09. Double: 0.49.
        8. U-Value Winter (SI) : Single: 6.13. Double: 2.78.
        9. Luminous Efficacy: Single: 0.76. Double: 0.58.
        10. Total Solar Energy Rejected: Single: 54 percent. Double: 45 percent.
        11. Mechanical Properties:

Thickness: 10 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 270 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact Safety Testing: AS/NZS 2208.

* + 1. Basis of Design: NT Natura i: Low reflectance neutral grey solar control films give high effective heat rejection, glare reduction and privacy.
       1. Film: NT Natura 05i: Single panel only.
          1. Visible Light Transmitted: 7 percent.
          2. Visible Light Reflected: Interior: 11 percent. Exterior: 14 percent.
          3. Ultra Violet Block: 99 percent.
          4. Total Solar Energy: Reflected: 20 percent. Transmitted: 12 percent. Absorbed: 68 percent.
          5. Emissivity (Room Side): 0.78.
          6. Glare Reduction: 92 percent.
          7. Selective InfraRed Reduction: 82 percent.
          8. InfraRed Energy Rejection: 64 percent.
          9. Shading Coefficient: 0.35.
          10. Solar Heat Gain Coeff. (G-Value): 0.30.
          11. U-Value Winter (IP): 1.01. U-Value Winter (SI): 5.73.
          12. Luminous Efficacy: 0.20.
          13. Total Solar Energy Rejected: 70 percent.
       2. Film: NT Natura 15i: Single panel only.
          1. Visible Light Transmitted: 16 percent.
          2. Visible Light Reflected: Interior: 11 percent. Exterior: 9 percent.
          3. Ultra Violet Block: 99 percent.
          4. Total Solar Energy: Reflected: 10 percent. Transmitted: 15 percent. Absorbed: 75 percent.
          5. Emissivity (Room Side): 0.86.
          6. Glare Reduction: 83 percent.
          7. Selective InfraRed Reduction: 85 percent.
          8. InfraRed Energy Rejection: 63 percent.
          9. Shading Coefficient: 0.44.
          10. Solar Heat Gain Coeff. (G-Value): 0.386.
          11. U-Value Winter (IP): 1.05. U-Value Winter (SI): 5.80.
          12. Luminous Efficacy: 0.36.
          13. Total Solar Energy Rejected: 62 percent.
       3. Film: NT Natura 30i:
          1. Visible Light Transmitted: Single: 31 percent. Double: 29 percent.
          2. Visible Light Reflected:

Interior: Single: 9 percent. Double: 10 percent.

Exterior: Single: 14 percent. Double: 21 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 15 percent. Double: 19 percent.

Transmitted: Single: 33 percent. Double: 28 percent.

Absorbed: Single: 52 percent. Double: 53 percent.

* + - * 1. Emissivity (Room Side): Single: 0.87. Double: 0.87.
        2. Glare Reduction: Single: 65 percent. Double: 65 percent.
        3. Selective InfraRed Reduction: Single: 65 percent. Double: 65 percent.
        4. InfraRed Energy Rejection: Single: 49 percent. Double: 49 percent.
        5. Shading Coefficient: Single: 0.56. Double: 0.66.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.48. Double: 0.58.
        7. U-Value Winter (IP) : Single: 1.05. Double: 0.48.
        8. U-Value Winter (SI) : Single: 6.00. Double: 2.75.
        9. Luminous Efficacy: Single: 0.55 Double: 0.44.
        10. Total Solar Energy Rejected: Single: 52 percent. Double: 42 percent.

\*\* NOTE TO SPECIFIER \*\* With their bold aesthetics, the Avery Dennison Reflective Films deliver a strong visual statement while improving a building's energy efficiency, the occupants' comfort, and overall value to the commercial building owner. Delete article if not required.

* 1. REFLECTIVE WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete interior or exterior paragraph, whichever is not required.

* + 1. Interior:

\*\* NOTE TO SPECIFIER \*\* Delete basis of design options not require Then delete film options not required.

* + - 1. Basis of Design: R Silver i: For attractive appearance and excellent solar heat rejection. Available in two Light Visual Transmission (LVT) levels.
         1. Film: R Silver 20i:

Visible Light Transmitted: Single: 18 percent. Double: 17 percent.

Visible Light Reflected:

Interior: Single: 62 percent. Double: 62 percent.

Exterior: Single: 61 percent. Double: 61 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 55 percent. Double: 49 percent.

Transmitted: Single: 13 percent. Double: 12 percent.

Absorbed: Single: 32 percent. Double: 38 percent.

Emissivity (Room Side): Single: 0.71. Double: 0.71.

Glare Reduction: Single: 80 percent. Double: 79 percent.

Selective InfraRed Reduction: Single: 90 percent. Double: 90 percent.

InfraRed Energy Rejection: Single: 79 percent. Double: 79 percent.

Shading Coefficient: Single: 0.25. Double: 0.35.

Solar Heat Gain Coeff. (G-Value): Single: 0.22. Double: 0.30.

U-Value Winter (IP) : Single: 0.97. Double: 0.46.

U-Value Winter (SI) : Single: 5.51. Double: 2.62.

Luminous Efficacy: Single: 0.72. Double: 0.49.

Total Solar Energy Rejected: Single: 78 percent. Double: 70 percent.

* + - * 1. Film: R Silver 35i:

Visible Light Transmitted: Single: 33 percent. Double: 31 percent.

Visible Light Reflected:

Interior: Single: 41 percent. Double: 42 percent.

Exterior: Single: 42 percent. Double: 44 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 39 percent. Double: 37 percent.

Transmitted: Single: 25 percent. Double: 22 percent.

Absorbed: Single: 36 percent. Double: 41 percent.

Emissivity (Room Side): Single: 0.72. Double: 0.72.

Glare Reduction: Single: 63 percent. Double: 62 percent.

Selective InfraRed Reduction: Single: 80 percent. Double: 80 percent.

InfraRed Energy Rejection: Single: 68 percent. Double: 68 percent.

Shading Coefficient: Single: 0.40. Double: 0.49.

Solar Heat Gain Coeff. (G-Value): Single: 0.35. Double: 0.42.

U-Value Winter (IP) : Single: 0.98. Double: 0.46.

U-Value Winter (SI) : Single: 5.57. Double: 2.63.

Luminous Efficacy: Single: 0.85. Double: 0.64.

Total Solar Energy Rejected: Single: 65 percent. Double: 58 percent.

* + - 1. Basis of Design: R Silver i Low E: For year-round comfort and energy efficiency. Maintains interior heat in winter and rejects solar heat from exterior in the summer.
         1. Film: R Silver 20i Low E:

Visible Light Transmitted: Single: 17 percent. Double: 016 percent.

Visible Light Reflected:

Interior: Single: 63 percent. Double: 63 percent.

Exterior: Single: 56 percent. Double: 57 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 51 percent. Double: 46 percent.

Transmitted: Single: 12 percent. Double: 11 percent.

Absorbed: Single: 37 percent. Double: 43 percent.

Emissivity (Room Side): Single: 0.39. Double: 0.39.

Glare Reduction: Single: 81 percent. Double: 81 percent.

Selective InfraRed Reduction: Single: 91 percent. Double: 91 percent.

InfraRed Energy Rejection: Single: 82 percent. Double: 82 percent.

Shading Coefficient: Single: 0.24. Double: 0.34.

Solar Heat Gain Coeff. (G-Value): Single: 0.20. Double: 0.29.

U-Value Winter (IP) : Single: 0.79. Double: 0.41.

U-Value Winter (SI) : Single: 4.49. Double: 2.31.

Luminous Efficacy: Single: 0.71. Double: 0.47.

Total Solar Energy Rejected: Single: 80 percent. Double: 71 percent.

* + - 1. Basis of Design: R Silver Safety: Combines the reinforced protection of security laminates with superb heat rejection and UV block.
         1. Film: R Silver 20 4 mil:

Visible Light Transmitted: Single: 19 percent. Double: 18 percent.

Visible Light Reflected:

Interior: Single: 61 percent. Double: 61 percent.

Exterior: Single: 60 percent. Double: 60 percent.

Ultra Violet Block: Single: 99 percent. Double: 9 percent.

Total Solar Energy:

Reflected: Single: 53 percent. Double: 48 percent.

Transmitted: Single: 14 percent. Double: 12 percent.

Absorbed: Single: 33 percent. Double: 40 percent.

Emissivity (Room Side): Single: 0.74. Double: 0.74.

Glare Reduction: Single: 79 percent. Double: 78 percent.

Selective InfraRed Reduction: Single: 65 percent. Double: 65 percent.

InfraRed Energy Rejection: Single: 49 percent. Double: 49 percent.

Shading Coefficient: Single: 0.27. Double: 0.36.

Solar Heat Gain Coeff. (G-Value): Single: 0.23. Double: 0.31.

U-Value Winter (IP) : Single: 0.99. Double: 0.47.

U-Value Winter (SI) : Single: 5.62. Double: 2.65.

Luminous Efficacy: Single: 0.70. Double: 0.49.

Total Solar Energy Rejected: Single: 77 percent. Double: 69 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact Safety Testing: EN 12600 Class 2B2.

* + - * 1. Film: R Silver 20 9 mil:

Visible Light Transmitted: Single: 20 percent. Double: 19 percent.

Visible Light Reflected:

Interior: Single: 61 percent. Double: 61 percent.

Exterior: Single: 57 percent. Double: 56 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 50 percent. Double: 46 percent.

Transmitted: Single: 15 percent. Double: 13 percent.

Absorbed: Single: 35 percent. Double: 41 percent.

Emissivity (Room Side): Single: 0.91 percent. Double: 0.91 percent.

Glare Reduction: Single: 78 percent. Double: 77 percent.

Selective InfraRed Reduction: Single: 92 percent. Double: 92 percent.

InfraRed Energy Rejection: Single: 80 percent. Double: 80 percent.

Shading Coefficient: Single: 0.30. Double: 0.40.

Solar Heat Gain Coeff. (G-Value): Single: 0.25. Double: 0.34.

U-Value Winter (IP) : Single: 1.08. Double: 0.49.

U-Value Winter (SI) : Single: 6.13. Double: 2.75.

Luminous Efficacy: Single: 0.67. Double: 0.48.

Total Solar Energy Rejected: Single: 75 percent. Double: 66 percent.

Mechanical Properties:

Thickness: 9 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 245 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact Safety Testing: EN 12600 Class 2B2.

* + 1. Exterior Films:

\*\* NOTE TO SPECIFIER \*\* Delete basis of design options not required. then delete film options not required.

* + - 1. Basis of Design: R Silver X: Attractive appearance. Excellent solar heat rejection. Compatible with glass window systems. Available in multiple VLTs.p
         1. Film: R Silver 20X:

Visible Light Transmitted: Single: 17 percent. Double: 16 percent.

Visible Light Reflected:

Interior: Single: 62 percent. Double: 62 percent.

Exterior: Single: 62 percent. Double: 62 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 63 percent. Double: 64 percent.

Transmitted: Single: 12 percent. Double: 11 percent.

Absorbed: Single: 25 percent. Double: 25 percent.

Emissivity (Room Side): Single: 0.84 percent. Double: 0.84 percent.

Glare Reduction: Single: 81 percent. Double: 80 percent.

Selective InfraRed Reduction: Single: 91 percent. Double: 91 percent.

InfraRed Energy Rejection: Single: 84 percent. Double: 84 percent.

Shading Coefficient: Single: 0.22. Double: 0.18.

Solar Heat Gain Coeff. (G-Value): Single: 0.19. Double: 0.15.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.75. Double: 0.91.

Total Solar Energy Rejected: Single: 81 percent. Double: 85 percent.

* + - * 1. Film: R Silver 35X:

Visible Light Transmitted: Single: 33 percent. Double: 31 percent.

Visible Light Reflected:

Interior: Single: 42 percent. Double: 44 percent.

Exterior: Single: 42 percent. Double: 43 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 45 percent. Double: 46 percent.

Transmitted: Single: 25 percent. Double: 22 percent.

Absorbed: Single: 30 percent. Double: 32 percent.

Emissivity (Room Side): Single: 0.84 percent. Double: 0.84 percent.

Glare Reduction: Single: 63 percent. Double: 62 percent.

Selective InfraRed Reduction: Single: 80 percent. Double: 80 percent.

InfraRed Energy Rejection: Single: 71 percent. Double: 71 percent.

Shading Coefficient: Single: 0.39. Double: 0.32.

Solar Heat Gain Coeff. (G-Value): Single: 0.34. Double: 0.28.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 0.84. Double: 0.96.

Total Solar Energy Rejected: Single: 66 percent. Double: 72 percent.

* + - 1. Basis of Design: R Silver X Poly: For installation on polycarbonate and other rigid plastic substrates.
         1. Film: R Silver 20X Poly: Single panel only.

Visible Light Transmitted: 16 percent.

Visible Light Reflected: Interior: 63 percent. Exterior: 64 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 65 percent. Transmitted: 12 percent. Absorbed: 23 percent.

Emissivity (Room Side): 0.84.

Glare Reduction: 82 percent.

Selective InfraRed Reduction: 90 percent.

InfraRed Energy Rejection: 84 percent.

Shading Coefficient: 0.22.

Solar Heat Gain Coeff. (G-Value): 0.19.

U-Value Winter (IP): 1.04. U-Value Winter (SI): 5.91.

Luminous Efficacy: 0.75.

Total Solar Energy Rejected: 81 percent.

* + - 1. Basis of Design: Skylite 20 XTRM Pro: Specialty film, engineered for harsh weather conditions. Constructed with a unique metal alloy giving skylight windows exceptional durability, corrosion resistance, neutral appearance, UV-protection, and energy savings. 10 year limited warranty when installed on compatible glazing systems by a certified Avery Dennison XTRM installer.
         1. Film: Skylite 20 XTRM Pro:

Visible Light Transmitted: Single: 23 percent. Double: 21 percent.

Visible Light Reflected:

Interior: Single: 31 percent. Double: 35 percent.

Exterior: Single: 26 percent. Double: 27 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 26 percent. Double: 26 percent.

Transmitted: Single: 20 percent. Double: 17 percent.

Absorbed: Single: 54 percent. Double: 57 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 74 percent. Double: 74 percent.

Selective InfraRed Reduction: Single: 81 percent. Double: 85 percent.

InfraRed Energy Rejection: Single: 64 percent. Double: 74 percent.

Shading Coefficient: Single: 0.42. Double: 0.31.

Solar Heat Gain Coeff. (G-Value): Single: 0.37. Double: 0.27.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.75.

Luminous Efficacy: Single: 0.55. Double: 0.68.

Total Solar Energy Rejected: Single: 63 percent. Double: 73 percent.

* + - * 1. Film: Skylite 20 XTRM Pro Poly:

Visible Light Transmitted: Single: 23 percent. Double: 21 percent.

Visible Light Reflected:

Interior: Single: 31 percent. Double: 35 percent.

Exterior: Single: 26 percent. Double: 27 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 26 percent. Double: 26 percent.

Transmitted: Single: 20 percent. Double: 17 percent.

Absorbed: Single: 54 percent. Double: 57 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 74 percent. Double: 74 percent.

Selective InfraRed Reduction: Single: 81 percent. Double: 85 percent.

InfraRed Energy Rejection: Single: 64 percent. Double: 74 percent.

Shading Coefficient: Single: 0.42. Double: 0.31.

Solar Heat Gain Coeff. (G-Value): Single: 0.37. Double: 0.27.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.75.

Luminous Efficacy: Single: 0.55. Double: 0.68.

Total Solar Energy Rejected: Single: 63 percent. Double: 73 percent.

* + - 1. Basis of Design: Skylite XTRM Pro: For horizontal and sloped roof applications. Blocks harmful radiation and lowers heat gain and glare up to 80 percent. Ten year warranty when installed by an Avery Dennison certified XTRM installer.
         1. Film: Skylight XTRM Pro:

Visible Light Transmitted: Single: 23 percent. Double: 21 percent.

Visible Light Reflected:

Interior: Single: 31 percent. Double: 35 percent.

Exterior: Single: 26 percent. Double: 27 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 26 percent. Double: 26 percent.

Transmitted: Single: 20 percent. Double: 17 percent.

Absorbed: Single: 54 percent. Double: 57 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 74 percent. Double: 74 percent.

Selective InfraRed Reduction: Single: 81 percent. Double: 85 percent.

InfraRed Energy Rejection: Single: 64 percent. Double: 74 percent.

Shading Coefficient: Single: 0.42. Double: 0.31.

Solar Heat Gain Coeff. (G-Value): Single: 0.37. Double: 0.27.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.75.

Luminous Efficacy: Single: 0.55. Double: 0.68.

Total Solar Energy Rejected: Single: 63 percent. Double: 73 percent.

* + - 1. Basis of Design: R Skylite XTRM Poly: For installation on polycarbonate and other rigid plastics. Requires i a certified XTRM installer for a ten year warranty.
         1. Film: R Skylight 20 XTRM Poly:

Visible Light Transmitted: 15 percent.

Visible Light Reflected: Interior: 63 percent. Exterior: 66 percent.

Ultra Violet Block: 99.9 percent.

Total Solar Energy:

Reflected: 64 percent.

Transmitted: 10 percent.

Absorbed: 26 percent.

Emissivity (Room Side): 0.84.

Glare Reduction: 84 percent.

Selective InfraRed Reduction: 92 percent.

InfraRed Energy Rejection: 85 percent.

Shading Coefficient: 0.20.

Solar Heat Gain Coeff. (G-Value): 0.17.

U-Value Winter (IP) : 1.03.

U-Value Winter (SI) : 5.85.

Luminous Efficacy: 0.72.

Total Solar Energy Rejected: 83 percent.

\*\* NOTE TO SPECIFIER \*\* We have over two decades of experience in designing and manufacturing multiple layer safety and security films designed to protect people and property against flying glass shards. Suitable for meeting building codes and insurance requirements, our Safety and Security films may help provide occupants with additional time to escape perilous conditions while providing some protection for break-ins and blasts. Delete article if not required.

* 1. SAFETY AND SECURITY WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete interior or exterior paragraph option. Whichever is not required.

* + 1. Interior:

\*\* NOTE TO SPECIFIER \*\* Delete basis of design option not required. Then delete the film option not required.

* + - 1. Basis of Design: SF Clear i Series: Exceptional clarity, low reflectance, and high levels of UV protection. From 4 to 15 mil based on the desired amount of protection.
         1. Film: SF Clear 4 mil: Single pane only.

Visible Light Transmitted: 89 percent.

Visible Light Reflected: Interior: 10 percent. Exterior: 10 percent.

Ultra Violet Block: 97 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 81 percent. Absorbed: 10 percent.

Glare Reduction: 1 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.96.

Solar Heat Gain Coeff. (G-Value): 0.84.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 16 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Fire:

ASTM D1929 Ignition.

ASTM E84 Surface Burn.

Anti-Graffiti: Paris Metro Anti-Graffiti.

Impact:

AS/NZS 2208.

ANSI Z97.1 12 inch pendulum fall.

ANSI Z97.1 18 inch pendulum fall.

CPSC 1201 Cat 1 18 inch pendulum fall.

CPSC 1201 Title 16 48 inch pendulum fall.

BS 6206 B.

EN 12600 2B2.

Bomb Blast: Bomb Blast GSA Level C (4 psi, 30 psi/msec) P(3B).

* + - * 1. Film: SF Clear 7 mil: Single pane only.

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 80 percent. Absorbed: 11 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.95.

Solar Heat Gain Coeff. (G-Value): 0.83.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 17 percent.

Mechanical Properties:

Thickness: 7mil.

Tensile Strength at Break: 26,000 psi.

Break Strength 180 lbs per inch.

Elongation at Break: 140 percent.

Peel Strength 7 lbs per inch.

Fire:

BS 476 Fire Propagation.

ASTM D1929 Ignition.

Impact:

AS/NZS 2208.

ANSI Z97.1 48 inch pendulum fall.

CPSC 1201 Title 16 48 inch pendulum fall.

EN 12600 2B2.

EN 12600 1B1.

Bomb Blast: Bomb Blast GSA Level C (4 psi, 30 psi/msec) P(3B).

* + - * 1. Film: SF Clear 8 mil: Single pane only.

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 80 percent. Absorbed: 11 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.95.

Solar Heat Gain Coeff. (G-Value): 0.83.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 17percent.

Mechanical Properties:

Thickness: 8 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 224 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact Safety Testing: EN 12600 Class 2B2.

Impact:

AS/NZS 2208.

ANSI Z97.1 48 inch pendulum fall.

CPSC 1201 Title 16 48 inch pendulum fall.

EN 12600 2B2.

EN 12600 1B1.

* + - * 1. Film: SF Clear 12 mil: Single panel only.

Visible Light Transmitted: 87 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 10 percent. Transmitted: 78 percent. Absorbed: 12 percent.

Glare Reduction: 3 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.94.

Solar Heat Gain Coeff. (G-Value): 0.82.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 18 percent.

Mechanical Properties:

Thickness: 12 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 336 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact:

EN 356 P4A.

DIN 52290 Part 4, A1.

Bomb Blast:

Siach Gefen IDF Testing (x2 + No Bar).

Bomb Blast GSA Level D (10.2 psi, 90.6 psi/msec).

UL 972 Burglary Resisting Glazing Material (3A) x2 + No Bar on Both Sides.

Wind Debris:

ASTM E330.

TAS 201, 202, 203, Florida Building Code (Dade County Small Missile Test) Hurricane.

* + - * 1. Film: SF Clear 15 mil: Single panel only.

Visible Light Transmitted: 87 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 11 percent. Transmitted: 77 percent. Absorbed: 12 percent.

Glare Reduction: 3 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.94.

Solar Heat Gain Coeff. (G-Value): 0.82.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 18 percent.

Mechanical Properties:

Thickness: 15 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 420 lbs per inch.

Elongation at Break: 140 percent.

Peel Strength 8 lbs per inch.

Impact: EN 356 P4A.

* + - 1. Basis of Design: SF Clear Mod Series: Safety and security protection to any Avery Dennison solar window film by installing it in combination with safety film SF Clear Mod. From 4 to 12 mil based on the desired amount of hazard protection.
         1. Film: SF Clear 4 mil Mod: Single panel only.

Visible Light Transmitted: 89 percent.

Visible Light Reflected: Interior: 10 percent. Exterior: 10 percent.

Ultra Violet Block: 97 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 81 percent. Absorbed: 10 percent.

Glare Reduction: 1 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.96.

Solar Heat Gain Coeff. (G-Value): 0.84.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 16 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Fire:

ASTM D1929 Ignition.

ASTM E84 Surface Burn.

Anti-Graffiti: Paris Metro Anti-Graffiti.

Impact:

AS/NZS 2208.

ANSI Z97.1 12 inch pendulum fall.

ANSI Z97.1 18 inch pendulum fall.

CPSC 1201 Cat 1 18 inch pendulum fall.

CPSC 1201 Title 16 48 inch pendulum fall.

BS 6206 B.

EN 12600 2B2.

Bomb Blast: Bomb Blast GSA Level C (4 psi, 30 psi/msec) P(3B).

* + - * 1. Film: SF Clear 7 mil Mod: Single panel only.

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 80 percent. Absorbed: 11 percent.

Glare Reduction: 0 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.95.

Solar Heat Gain Coeff. (G-Value): 0.83.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.04.

Total Solar Energy Rejected: 17 percent.

Mechanical Properties:

Thickness: 7 mil.

Tensile Strength at Break: 26,000 psi.

Break Strength 180 lbs per inch.

Elongation at Break: 140 percent.

Peel Strength 7 lbs per inch.

Fire:

BS 476 Fire Propagation.

ASTM D1929 Ignition.

Impact:

AS/NZS 2208.

ANSI Z97.1 48 inch pendulum fall.

CPSC 1201 Title 16 48 inch pendulum fall.

EN 12600 2B2.

EN 12600 1B1.

Bomb Blast: Bomb Blast GSA Level C (4 psi, 30 psi/msec) P(3B).

* + - * 1. Film: SF Clear 12 mil Mod: Single panel only.

Visible Light Transmitted: 87 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 10 percent. Transmitted: 78 percent. Absorbed: 12 percent.

Glare Reduction: 3 percent.

Selective InfraRed Reduction: N/A

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.94.

Solar Heat Gain Coeff. (G-Value): 0.82.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.07.

Total Solar Energy Rejected: 18 percent.

Mechanical Properties:

Thickness: 12 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 336 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Impact: EN 356 P4A.

Bomb Blast:

Siach Gefen IDF Testing (x2 + No Bar).

Bomb Blast GSA Level D (10.2 psi, 90.6 psi/msec).

UL 972 Burglary Resisting Glazing Material (3A) x2 + No Bar on Both Sides.

Wind Debris:

ASTM E330.

TAS 201, 202, 203, Florida Building Code (Dade County Small Missile Test) Hurricane.

* + - 1. Basis of Design: SF Matte i Series: Privacy and personal safety in retail and office applications. Combines anti-fragmentation security with an sandblasted aesthetic to deliver a safe cost-effective alternative to privacy glass or partitions.
         1. Film: SF Matte 5 mil i: Single panel only.

Visible Light Transmitted: 58 percent.

Visible Light Reflected: Interior: N/A percent. Exterior: 25 percent.

Ultra Violet Block: 98 percent.

Total Solar Energy: Reflected: 20 percent. Transmitted: 55 percent. Absorbed: 25 percent.

Glare Reduction: 36 percent.

Selective InfraRed Reduction: N/A percent.

InfraRed Energy Rejection: N/A percent.

Shading Coefficient: 0.72.

Solar Heat Gain Coeff. (G-Value): 62.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.05.

Total Solar Energy Rejected: 38 percent.

Mechanical Properties:

Thickness: 5 mil.

Tensile Strength at Break: 25,000 psi.

Break Strength 140 lbs per inch.

Elongation at Break: 140 percent.

Peel Strength 5 to 7 lbs per inch.

Impact Safety Testing: EN 12600 Class 2B2.

Impact: AS/NZS 2208 and EN 12600 2B2.

* + - * 1. Film: SF Matte 12 mil i: Single panel only.

Visible Light Transmitted: 55 percent.

Visible Light Reflected: Interior: N/A percent. Exterior: 26 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 23 percent. Transmitted: 51 percent. Absorbed: 26 percent.

Glare Reduction: 38 percent.

Selective InfraRed Reduction: 46 percent.

InfraRed Energy Rejection: 37 percent.

Shading Coefficient: 0.69.

Solar Heat Gain Coeff. (G-Value): 0.60.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.08.

Total Solar Energy Rejected: 40 percent.

Mechanical Properties:

Thickness: 12 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 336 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + - 1. Basis of Design: AG Clear ix: On interior or exterior side of glass window systems for anti-graffiti protection. 97 percent UV block to reduce sun damage and fading.
         1. Film: AG Clear 4 mil ix: Single panel only.

Visible Light Transmitted: 90 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 92 percent.

Total Solar Energy: Reflected: 10 percent. Transmitted: 82 percent. Absorbed: 8 percent.

Glare Reduction: 0 percent.

Selective InfraRed Reduction: 21 percent.

InfraRed Energy Rejection: 17 percent.

Shading Coefficient: 0.97.

Solar Heat Gain Coeff. (G-Value): 00.84.

U-Value Winter (IP): 1.04. U-Value Winter (SI): 5.91.

Total Solar Energy Rejected: 16 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 3 to 4 lbs per inch.

* + - * 1. Film: AG Clear 6 mil ix: Single panel only.

Visible Light Transmitted: 90 percent.

Visible Light Reflected: Interior: 12 percent. Exterior: 12 percent.

Ultra Violet Block: 97 percent.

Total Solar Energy: Reflected: 11 percent. Transmitted: 82 percent. Absorbed: 7 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: 22 percent.

InfraRed Energy Rejection: 18 percent.

Shading Coefficient: 0.97.

Solar Heat Gain Coeff. (G-Value): 0.84.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.0.

Total Solar Energy Rejected: 16 percent.

Mechanical Properties:

Thickness: 6 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 2 to 3 lbs per inch.

* + 1. Exterior:

\*\* NOTE TO SPECIFIER \*\* Delete basis of deign options not required. Then delete film options not required.

* + - 1. Basis of Design: SF Clear X: Safety, security, clarity, low reflectance, and high levels of UV protection.
         1. Film: SF Clear 4 mil ix: Single panel only.

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 10 percent. Exterior: 10 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 10 percent. Transmitted: 80 percent. Absorbed: 10 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: 22 percent.

InfraRed Energy Rejection: 18 percent.

Shading Coefficient: 0.96.

Solar Heat Gain Coeff. (G-Value): 0.83.

U-Value Winter (IP): 1.04. U-Value Winter (SI): 5.91.

Total Solar Energy Rejected: 17 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

Anti-Graffiti: Paris Metro Anti-Graffiti.

Impact: AS/NZS 2208 and EN 12600 2B2.

* + - * 1. Film: SF Clear 7 mil ix: Single panel only.

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 80 percent. Absorbed: 11 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: N/A.

InfraRed Energy Rejection: N/A.

Shading Coefficient: 0.95.

Solar Heat Gain Coeff. (G-Value): 0.83.

U-Value Winter (IP): 1.04. U-Value Winter (SI): 5.91.

Total Solar Energy Rejected: 17 percent.

Mechanical Properties:

Thickness: 7 mil.

Tensile Strength at Break: 26,000 psi.

Break Strength 180 lbs per inch.

Elongation at Break: 140 percent.

Peel Strength 7 lbs per inch.

Impact: EN 12600 1B1.

* + - 1. Basis of Design: AG Clear ix: Interior or exterior side of most glass window systems for anti-graffiti protection.
         1. Film: AG Clear 4 mil ix: Single panel only.

Visible Light Transmitted: 90 percent.

Visible Light Reflected: Interior: 11 percent. Exterior: 11 percent.

Ultra Violet Block: 92 percent.

Total Solar Energy: Reflected: 10 percent. Transmitted: 82 percent. Absorbed: 8 percent.

Glare Reduction: 0 percent.

Selective InfraRed Reduction: 21 percent.

InfraRed Energy Rejection: 18 percent.

Shading Coefficient: 0.97.

Solar Heat Gain Coeff. (G-Value): 0.84.

U-Value Winter (IP): 1.04. U-Value Winter (SI): 5.91.

Total Solar Energy Rejected: 16 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 3 to 4 lbs per inch.

* + - * 1. Film: AG Clear 6 mil ix: Single panel only.

Visible Light Transmitted: 90 percent.

Visible Light Reflected: Interior: 12 percent. Exterior: 12 percent.

Ultra Violet Block: 97 percent.

Total Solar Energy: Reflected: 11 percent. Transmitted: 82 percent. Absorbed: 7 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: 22 percent.

InfraRed Energy Rejection: 18 percent.

Shading Coefficient: 0.97.

Solar Heat Gain Coeff. (G-Value): 0.84.

U-Value Winter (IP): 1.07. U-Value Winter (SI): 6.00.

Total Solar Energy Rejected: 16 percent.

Mechanical Properties:

Thickness: 6 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 2 to 3 lbs per inch.

* + - 1. Basis of Design: Clear Poly X: Compatible with most rigid plastics. Delivers protection from vandals. For exterior use to protect from gouging and acid attacks.
         1. Film: Clear 4 mil Poly X: Single panel only..

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 10 percent. Exterior: 10 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 10 percent. Transmitted: 80 percent. Absorbed: 10 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: N/A percent.

InfraRed Energy Rejection: N/A percent.

Shading Coefficient: 0.96.

Solar Heat Gain Coeff. (G-Value): 0.83.

U-Value Winter (IP): 1.04. U-Value Winter (SI): 5.91.

Total Solar Energy Rejected: 17 percent.

Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 1121 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + - * 1. Film: Clear 6 mil Poly X: Single panel only.

Visible Light Transmitted: 88 percent.

Visible Light Reflected: Interior: 10 percent. Exterior: 10 percent.

Ultra Violet Block: 99 percent.

Total Solar Energy: Reflected: 9 percent. Transmitted: 80 percent. Absorbed: 11 percent.

Glare Reduction: 2 percent.

Selective InfraRed Reduction: N/A percent.

InfraRed Energy Rejection: N/A percent.

Shading Coefficient: 0.95.

Solar Heat Gain Coeff. (G-Value): 0.82.

U-Value Winter (IP): 1.07 U-Value Winter (SI): 6.05.

Total Solar Energy Rejected: 18 percent.

Mechanical Properties:

Thickness: 6 mil.

Tensile Strength at Break: 28,000 psi.

Break Strength 125 lbs per inch.

Elongation at Break: 150 percent.

Peel Strength 1 to 2 lbs per inch.

\*\* NOTE TO SPECIFIER \*\* Avery Dennison Solar Safety interior films combine the shard protection of Safety Security films with outstanding solar energy rejection for the needs of industry, businesses, and institutions. Delete article if not required.

* 1. SOLAR SAFETY WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete basis of design options not required. Then delete film options not required.

* + 1. Basis of Design: R Silver Safety interior films: Combine protection of security laminates with heat rejection, UV block Available in a range of thicknesses for different security threats.
       1. Film: R Silver 20 4 mil:
          1. Visible Light Transmitted: Single: 19 percent. Double: 18 percent.
          2. Visible Light Reflected:

Interior: Single: 61 percent. Double: 61 percent.

Exterior: Single: 60 percent. Double: 60 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 53 percent. Double: 48 percent.

Transmitted: Single: 14 percent. Double: 12 percent.

Absorbed: Single: 33 percent. Double: 40 percent.

* + - * 1. Emissivity (Room Side): Single: 0.74. Double: 0.74.
        2. Glare Reduction: Single: 79 percent. Double: 78 percent.
        3. Selective InfraRed Reduction: Single: 65 percent. Double: 65 percent.
        4. InfraRed Energy Rejection: Single: 49 percent. Double: 49 percent.
        5. Shading Coefficient: Single: 0.27. Double: 0.36.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.23. Double: 0.31.
        7. U-Value Winter (IP) : Single: 0.99. Double: 0.47.
        8. U-Value Winter (SI) : Single: 5.62. Double: 2.65.
        9. Luminous Efficacy: Single: 0.70. Double: 0.49.
        10. Total Solar Energy Rejected: Single: 77 percent. Double: 69 percent.
        11. Mechanical Properties:

Thickness: 4 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 112 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + - * 1. Impact EN 12600 Class 2B2.
      1. Film: R Silver 20 9 mil:
         1. Visible Light Transmitted: Single: 20 percent. Double: 19 percent.
         2. Visible Light Reflected:

Interior: Single: 61 percent. Double: 61 percent.

Exterior: Single: 57 percent. Double: 56 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 50 percent. Double: 46 percent.

Transmitted: Single: 15 percent. Double: 13 percent.

Absorbed: Single: 35 percent. Double: 41 percent.

* + - * 1. Emissivity (Room Side): Single: 0.91. Double: 0.91.
        2. Glare Reduction: Single: 78 percent. Double: 77 percent.
        3. Selective InfraRed Reduction: Single: 92 percent. Double: 92 percent.
        4. InfraRed Energy Rejection: Single: 80 percent. Double: 80 percent.
        5. Shading Coefficient: Single: 0.30. Double: 0.40.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.25. Double: 0.34.
        7. U-Value Winter (IP) : Single: 1.08. Double: 0.49.
        8. U-Value Winter (SI) : Single: 6.13. Double: 2.78.
        9. Luminous Efficacy: Single: 0.67. Double: 0.48.
        10. Total Solar Energy Rejected: Single: 75 percent. Double: 66 percent.
        11. Mechanical Properties:

Thickness: 9 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 245 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + 1. Basis of Design: NT PerLite Ceramic Films: Neutral grey in color. Solar rejection. Reduce heat gain and glare Available in a range of thicknesses based for varying hazard protection.
       1. Film: NT PerLite Ceramic 35 6 mil:
          1. Visible Light Transmitted: Single: 40 percent. Double: 36 percent.
          2. Visible Light Reflected:

Interior: Single: 16 percent. Double: 18 percent.

Exterior: Single: 18 percent. Double: 24 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 19 percent. Double: 22 percent.

Transmitted: Single: 29 percent. Double: 25 percent.

Absorbed: Single: 52 percent. Double: 53 percent.

* + - * 1. Emissivity (Room Side): Single: 0.90. Double: 0.90.
        2. Glare Reduction: Single: 56 percent. Double: 55 percent.
        3. Selective InfraRed Reduction: Single: 86 percent. Double: 86 percent.
        4. InfraRed Energy Rejection: Single: 69 percent. Double: 69 percent.
        5. Shading Coefficient: Single: 0.52. Double: 0.63.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.44. Double: 0.54.
        7. U-Value Winter (IP) : Single: 1.07. Double: 0.49.
        8. U-Value Winter (SI) : Single: 6.08. Double: 2.78.
        9. Luminous Efficacy: Single: 0.77. Double: 0.58.
        10. Total Solar Energy Rejected: Single: 56 percent. Double: 46 percent.
        11. Mechanical Properties:

Thickness: 6 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 145 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + - * 1. Impact: AS/NZS 2208.
      1. Film: NT PerLite Ceramic 35 10 mil:
         1. Visible Light Transmitted: Single: 40 percent. Double: 37 percent.
         2. Visible Light Reflected:

Interior: Single: 17 percent. Double: 18 percent.

Exterior: Single: 17 percent. Double: 23 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 18 percent. Double: 21 percent.

Transmitted: Single: 30 percent. Double: 26 percent.

Absorbed: Single: 52 percent. Double: 53 percent.

* + - * 1. Emissivity (Room Side): Single: 0.91. Double: 0.91.
        2. Glare Reduction: Single: 55 percent. Double: 55 percent.
        3. Selective InfraRed Reduction: Single: 33 percent. Double: 33 percent.
        4. InfraRed Energy Rejection: Single: 26 percent. Double: 26 percent.
        5. Shading Coefficient: Single: 0.53. Double: 0.64.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.46. Double: 0.55.
        7. U-Value Winter (IP) : Single: 1.08 Double: 0.49.
        8. U-Value Winter (SI) : Single: 6.13. Double: 2.78.
        9. Luminous Efficacy: Single: 0.76. Double: 0.58.
        10. Total Solar Energy Rejected: Single: 54 percent. Double: 45 percent.
        11. Mechanical Properties:

Thickness: 10 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 270 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + 1. Basis of Design: SP e-Lite: Combines shard protection with sputtered optical filter and nanotechnology to selectively block infrared radiation and solar heat.
       1. Film: SP e-Lite 70 8 mil: Single panel only.
          1. Visible Light Transmitted: Single: 65 percent. Double: 60 percent.
          2. Visible Light Reflected:

Interior: Single: 18 percent. Double: 21 percent.

Exterior: Single: 18 percent. Double: 23 percent.

* + - * 1. Ultra Violet Block: Single: 99 percent. Double: 99 percent.
        2. Total Solar Energy:

Reflected: Single: 25 percent. Double: 25 percent.

Transmitted: Single: 38 percent. Double: 33 percent.

Absorbed: Single: 37 percent. Double: 42 percent.

* + - * 1. Emissivity (Room Side): Single: 0.73. Double: 0.73.
        2. Glare Reduction: Single: 27 percent. Double: 26 percent.
        3. Selective InfraRed Reduction: Single: N/A. Double: N/A.
        4. InfraRed Energy Rejection: Single: N/A. Double: N/A.
        5. Shading Coefficient: Single: 0.56. Double: 0.63.
        6. Solar Heat Gain Coeff. (G-Value): Single: 0.49. Double: 0.54.
        7. U-Value Winter (IP) : Single: 1.03 Double: 0.48.
        8. U-Value Winter (SI) : Single: 5.85. Double: 2.71.
        9. Luminous Efficacy: Single: 1.16. Double: 0.95.
        10. Total Solar Energy Rejected: Single: 51 percent. Double: 46 percent.
        11. Mechanical Properties:

Thickness: 8 mil.

Tensile Strength at Break: 28,500 psi.

Break Strength 220 lbs per inch.

Elongation at Break: 125 percent.

Peel Strength 7 lbs per inch.

* + - * 1. Impact: AS/NZS 2208.

\*\* NOTE TO SPECIFIER \*\* Avery Dennison's Spectrally Selective window films reduce solar heat gain while maintaining high levels of daylight entering through windows and while preserving the natural, transparent appearance of the glass. Delete article if not required.

* 1. SPECTRALLY SELECTIVE WINDOW FILMS

\*\* NOTE TO SPECIFIER \*\* Delete Interior or exterior paragraph, whichever is not required.

* + 1. Interior:
       1. Basis of Design: SP e-Lite I Films: Neutral color features low visible reflection inside and out. Compatible with all glass glazing window systems.

\*\* NOTE TO SPECIFIER \*\* Delete film option not required.

* + - * 1. Film: SP e-Lite 45i:

Visible Light Transmitted: Single: 44 percent. Double: 40 percent.

Visible Light Reflected:

Interior: Single: 12 percent. Double: 14 percent.

Exterior: Single: 17 percent. Double: 23 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 24 percent. Double: 26 percent.

Transmitted: Single: 26 percent. Double: 23 percent.

Absorbed: Single: 50 percent. Double: 51 percent.

Emissivity (Room Side): Single: 0.83. Double: 0.83.

Glare Reduction: Single: 51 percent. Double: 50 percent.

Selective InfraRed Reduction: Single: 86 percent. Double: 86 percent.

InfraRed Energy Rejection: Single: 69 percent. Double: 69 percent.

Shading Coefficient: Single: 0.47. Double: 0.58.

Solar Heat Gain Coeff. (G-Value): Single: 0.41. Double: 0.51.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.88. Double: 2.72.

Luminous Efficacy: Single: 0.94. Double: 0.69.

Total Solar Energy Rejected: Single: 59 percent. Double: 49 percent.

* + - * 1. Film: SP e-Lite 70i:

Visible Light Transmitted: Single: 66 percent. Double: 61 percent.

Visible Light Reflected:

Interior: Single: 15 percent. Double: 18 percent.

Exterior: Single: 16 percent. Double: 21 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 23 percent. Double: 25 percent.

Transmitted: Single: 36 percent. Double: 33 percent.

Absorbed: Single: 41 percent. Double: 42 percent.

Emissivity (Room Side): Single: 0.73 percent. Double: 0.73 percent.

Glare Reduction: Single: 27 percent. Double: 25 percent.

Selective InfraRed Reduction: Single: 87 percent. Double: 87 percent.

InfraRed Energy Rejection: Single: 71 percent. Double: 71 percent.

Shading Coefficient: Single: 0.55. Double: 0.64.

Solar Heat Gain Coeff. (G-Value): Single: 0.48. Double: 0.56.

U-Value Winter (IP) : Single: 0.98. Double: 0.46.

U-Value Winter (SI) : Single: 5.59. Double: 2.654.

Luminous Efficacy: Single: 1.20. Double: 0.95.

Total Solar Energy Rejected: Single: 52 percent. Double: 44 percent.

* + 1. Exterior:

\*\* NOTE TO SPECIFIER \*\* Delete basis of deign options not required. Then delete film options not required.

* + - 1. Basis of Design: SP e-Lite X: Delivers heat rejection, without compromising the original building facade or view. Applied to the exterior of the glass.
         1. Film: SP e-Lite 45x:

Visible Light Transmitted: Single: 47 percent. Double: 43 percent.

Visible Light Reflected:

Interior: Single: 12 percent. Double: 19 percent.

Exterior: Single: 17 percent. Double: 19 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 30 percent. Double: 31 percent.

Transmitted: Single: 27 percent. Double: 23 percent.

Absorbed: Single: 43 percent. Double: 46 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 48 percent. Double: 47 percent.

Selective InfraRed Reduction: Single: 86 percent. Double: 86 percent.

InfraRed Energy Rejection: Single: 72 percent. Double: 72 percent.

Shading Coefficient: Single: 0.45. Double: 0.36.

Solar Heat Gain Coeff. (G-Value): Single: 0.39. Double: 0.31.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.92. Double: 2.73.

Luminous Efficacy: Single: 1.04. Double: 1.19.

Total Solar Energy Rejected: Single: 61 percent. Double: 69 percent.

* + - * 1. Film: SP e-Lite 70x:

Visible Light Transmitted: Single: 67 percent. Double: 61 percent.

Visible Light Reflected:

Interior: Single: 17 percent. Double: 23 percent.

Exterior: Single: 18 percent. Double: 22 percent.

Ultra Violet Block: Single: 99.9 percent. Double: 99.9 percent.

Total Solar Energy:

Reflected: Single: 30 percent. Double: 31 percent.

Transmitted: Single: 37 percent. Double: 33 percent.

Absorbed: Single: 33 percent. Double: 36 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 25 percent. Double: 24 percent.

Selective InfraRed Reduction: Single: 83 percent. Double: 83 percent.

InfraRed Energy Rejection: Single: 70 percent. Double: 70 percent.

Shading Coefficient: Single: 0.54. Double: 0.45.

Solar Heat Gain Coeff. (G-Value): Single: 0.47. Double: 0.39.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.92. Double: 2.73.

Luminous Efficacy: Single: 1.24. Double: 1.36.

Total Solar Energy Rejected: Single: 53 percent. Double: 61 percent.

* + - 1. Basis of Design: SP Blue X: Filters 88 percent of IR radiation keeping building cooler without blocking natural daylight. Compatible with all glass glazing systems.
         1. Film: SP Blue 75X:

Visible Light Transmitted: Single: 76 percent. Double: 69 percent.

Visible Light Reflected:

Interior: Single: 9 percent. Double: 17 percent.

Exterior: Single: 9 percent. Double: 15 percent.

Ultra Violet Block: Single: 99 percent. Double: 99 percent.

Total Solar Energy:

Reflected: Single: 8 percent. Double: 10 percent.

Transmitted: Single: 39 percent. Double: 34 percent.

Absorbed: Single: 53 percent. Double: 56 percent.

Emissivity (Room Side): Single: 0.84. Double: 0.84.

Glare Reduction: Single: 16 percent. Double: 15 percent.

Selective InfraRed Reduction: Single: 88 percent. Double: 88 percent.

InfraRed Energy Rejection: Single: 63 percent. Double: 63 percent.

Shading Coefficient: Single: 0.62. Double: 0.50.

Solar Heat Gain Coeff. (G-Value): Single: 0.54. Double: 043.

U-Value Winter (IP) : Single: 1.04. Double: 0.48.

U-Value Winter (SI) : Single: 5.91. Double: 2.73.

Luminous Efficacy: Single: 1.20. Double: 1.38.

Total Solar Energy Rejected: Single: 46 percent. Double: 57 percent.

\*\* NOTE TO SPECIFIER \*\* Vela Dynamic Display System from Avery Dennison is a smart window film that incorporates innovative technology to enhance retail and other commercial interior environments. Delete article if not required.

* 1. VELA WINDOW FILM
     1. Vela Smart Film: PDLC technology on conductive coated film, with pressure Sensitive wet or dry adhesive and Scratch Resistant Coating. The particles or molecules inside the films scatter or align as films are turned on and off, allowing light to pass through for opacity or transparency, and the switchable control of various forms of light (visible, IR, UV).

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs not required.

* + 1. Vela Privacy:
       1. Performance and Design Requirements:
          1. Operation. Wall switch and/or wireless remote.

When ' ON': Excellent transparency and clarity.

When ' OFF': Full opacity.

* + - * 1. Virtually instant on-off switching.
        2. May be retrofitted on any existing interior glass.
        3. Multi-window control.
        4. Scratch-resistant hard coating to ensure easy, scratch-free maintenance.
        5. Advanced controller hardware delivers best performance:

Improved power protection.

Compatibility with smart systems and Wi-Fi.

* + - * 1. Customization: Laser cut to different shapes and sizes.
        2. Low energy consumption.
    1. Vela Display:
       1. Performance and Design Requirements:
          1. Operation. Wall switch and/or wireless remote.

When ' ON': Excellent transparency and clarity.

When ' OFF': Full opacity.

* + - * 1. Virtually instant on-off switching.
        2. May be retrofitted on any existing interior glass.
        3. Multi-window control.
        4. Scratch-resistant hard coating to ensure easy, scratch-free maintenance.
        5. Advanced controller hardware delivers best performance:

Improved power protection.

Compatibility with smart systems and Wi-Fi\_\_\_33.

* + - * 1. Customization: Laser cut to different shapes and sizes.
        2. Low energy consumption.
        3. Fully integrated solution for dynamic display.
        4. Unique multi-channel control to syndicate messages across multiple locations or broadcast store-specific advertisements and media.
        5. No-glare, rear projection.
        6. Ability to project high resolution content.
        7. Compatibility with media management software.
        8. Viewing Angle: 178 degrees.
    1. VELA Smart Retrofit Film: A thin translucent film over indoor glass panes. When switched-on: An electric current is imposed on the film transforming it to transparent.
       1. Appearance: Off: Translucent. On: Clear.
       2. Parallel Visible Light Transmittance: Off: 3 percent. On: 78 percent.
       3. Total Visible Light Transmittance: Off: 65 percent. On: 81 percent.
       4. Haze: Off: Greater than 99 percent. On: 3 percent.
       5. Switching Time: Off to On: 10 msec. On to Off: 150 msec.
       6. Operating Modes: ON/OFF, Dimmer.
       7. Operating Voltage: 70 VAC square wave.
       8. Operating Frequency: 25 to 30 Hz.
       9. Operating Frequency: 32 Hz.
       10. Operating Frequency: 50 to 60 Hz.
       11. Power Consumption: 2 to 4 W per m2.
       12. Film Thickness: 275 micron (10 mil).
       13. SR Hardcoat Taber Abrasion Resistance (ASTM D1044) Delta Haze: Less than 2 percent.
       14. PS Adhesion Strength: 600 to 800 grams per inch.
       15. Operating Temperature Range: 14 to 158 degrees F (-10 to 70 degrees C).
  1. BIRD DETERRENT FILM
     1. Basis of Design: Bird Deterrent Film.
        1. Visible Light Transmitted: Single: 89 percent. Double: 88 percent.
        2. Visible Light Reflected:
           1. Interior: Single: 10 percent. Double: 9 percent.
           2. Exterior: Single: 10 percent. Double: 9 percent.
        3. Ultra Violet Block: Single: Greater than 99 percent. Double: Greater than 99 percent.
        4. Total Solar Energy:
           1. Reflected: Single: 8 percent. Double: 8 percent.
           2. Transmitted: Single: 78 percent. Double: 73 percent.
           3. Absorbed: Single: 14 percent. Double: 19 percent.
        5. Emissivity (Room Side): Single: 0.9. Double: 0.9.
        6. Glare Reduction: Single: 1 percent. percent. Double: 1 percent.
        7. Selective InfraRed Reduction (SIRR): Single: N/A. Double: N/A
        8. InfraRed Energy Rejection (IRER): Single: N/A. Double: N/A
        9. Shading Coefficient: Single: 0.95. Double: 0.9.
        10. Solar Heat Gain Coeff. (G-Value): Single: 0.82. Double: 0.78.
        11. U-Value Winter (IP): Single: 1.04. Double: 1.02.
        12. U-Value Winter (SI): Single: N/A. Double: N/A.
        13. Luminous Efficacy: Single: 0.94. Double: 0.97.
        14. Total Solar Energy Rejected: Single: 18 percent. Double: 22 percent.
        15. Standards Compliance:
            1. ASTM E84. Classified as Class A as defined in NFPA 101, Life Safety Code.
            2. VOC: Zero. 40 CFR 59, Subpart D; EPA method 24.
        16. Mechanical Properties:
            1. Gauge: 4.0 mil (100 micron).
            2. Peel Strength: Greater than 2,500 grams per inch.
            3. Tensile Strength: 30.000 lbs per sq inch (2,110 kg per sq cm).
            4. Break Strength: 120 lbs per inch (22 kg per cm).
            5. ASTM 04830 Puncture Test: 70 lbs (32 kg).

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until the substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* 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. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturers recommendations.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION