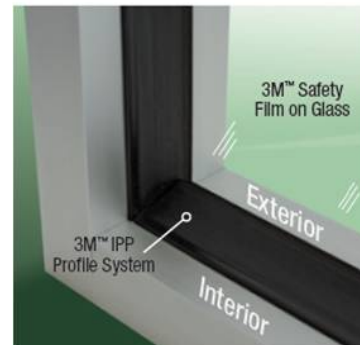


# 3M™ Impact Protection Attachment Systems

## 3M Impact Protection Profile

3M™ Impact Protection Profile improves the overall performance of 3M Safety and Security Window Films. This unique window protection system combines the toughness of 3M's patented micro-layer safety film with 3M's world-class expertise in adhesives and a high strength, flexible polymer attachment to help shield against impact from a variety of sources including bomb blasts and forced entry events. The 3M Impact Protection System also helps protect against personal injury from flying glass.



### 3M Impact Protection Profile Benefits:

- No cure time provides more immediate protection
- Reduced odor in your home or office compared to sealant options

Property	Test Method Used	Units	Value
Full Adhesion		days	1*
Working Time (25°C (77°F), 50% RH)		minutes	unlimited
VOC content		g/L	
Ultimate Tensile Strength	ASTM D0412	PLI (Mpa)	>142
Ultimate Elongation	ASTM D0412	%	400%
Durometer Hardness, Shore A	ASTM D2240	Points	70
Break Strength, Die B	ASTM D0624	ppi	>71

\*Temperature depicted above 60°F

### Important:

This product is not approved in the State of Florida for use as hurricane, windstorm, or impact protection from wind-borne debris from a hurricane or windstorm. In compliance with Florida Statute 553.842, this product may not be advertised, sold, offered, provided, distributed, or marketed in the State of Florida as hurricane, windstorm, or impact protection from wind-borne debris from a hurricane or windstorm.

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Renewable Energy Division

St. Paul, MN 55144-1000

1-866-499-8857

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# Specifications

## Specifications for 3M Impact Protection Profile, BP700

### 1.0 Scope

This specification is for a window film “flexible-mechanical” attachment system to anchor safety and security window film to a commercial style window frame. The attachment system helps secure filmed broken glass in the window frame, thus providing an increased level of safety and security for a broad range of applications, including basic glass fragment retention, spontaneous glass breakage, seismic preparedness, building envelope protection, bomb blast mitigation, Smash and Grab or Break and Entry events. The attachment system has a consistent appearance, is odorless, and exhibits a fast cure time. The film attachment system shall be called **BP700 3M Impact Protection Profile**.

### 2.0 Applicable Documents

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

The American Society for Testing and Materials (ASTM):

- ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
- ASTM D 2240 – Standard Test Method for Rubber Property – Durometer Hardness.
- ASTM D 624 - Standard Test Method of Test for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- ASTM D 5895 - Standard Test Methods for Evaluating Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders.
- ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
- ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure
- ASTM G 26 - Standard Practice for Performing Accelerated Outdoor Weathering for Non-metallic Materials Using Concentrated Natural Sunlight.
- ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
- ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
- ASTM F-1642 Standard Method of Test for Glazing and Glazing Systems Subject to Airblast Loadings, as adapted by the U.S. Government GSA Test Standard Protocols
- ASTM F-2912 Standard Specification for Glazing and Glazing Systems Subjected to Airblast Loadings

GSA-TS01-2003 General Services Administration Standard Test for Glazing and Glazing Systems Subject to Airblast Loadings

### 3.0 Impact Protection Profile Requirements

**3.1 Material:** The Impact Protection Profile shall consist of extruded EPDM rubber strip, approximately 1.125 inches wide, with two separate flanges each approximately ½ inches wide. Each flange shall contain 3M VHB foam tape, bonded to the EPDM rubber through heat activation and covered with a silicone release liner. The liner side of the VHB foam tape shall contain a pressure sensitive adhesive for bonding the profile to the filmed glass and frame surfaces. The profile shall be black in color. The profile attachment system shall be identified as to Manufacturer of Origin (hereafter to be called Manufacturer).

#### 3.2 Material Properties:

- a) Full Adhesion: 1 - 2 days (25°C, 50% RH)
- b) Ultimate Tensile Strength (ASTM D412): > 20,500 psi
- c) Ultimate Elongation (ASTM D412): 400%
- d) Break Strength, Die B (ASTM D624): > 71 ppi
- e) Durometer Hardness, Shore A: (ASTM D2240): 70 pts

#### Important:

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1-866-499-8857

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# Specifications

## Specifications for 3M Impact Protection Profile, BP700

3.3 **Uniformity:** Product shall have uniform consistency and appearance.

3.4 **Flammability:** Class A Interior Finish for Building Materials for both Flame Spread Index and Smoked Development Values per ASTM E-84

3.6 **Impact Protection:**

a. As part of a filmed glass system, film attachment shall demonstrate ability to withstand Small Missile A impact, with subsequent pressure cycling (per ASTMs E 1996 and E 1886) at +/- 50 psf design pressure.

3.7 **Bomb Blast Mitigation:**

- a. GSA Rating of "2" (Minimal Hazard) with minimum blast load of 4 psi overpressure and 28 psi\*msec blast impulse
- b. GSA Rating of "3B" (Low Hazard) with minimum blast load of 10 psi overpressure and 89 psi\*msec blast impulse
- c. ASTM F1642 rating of "Low Hazard" with minimum blast load of 4 psi overpressure and 28 psi\*msec blast impulse

### 4.0 Requirements of the Authorized Dealer/Applicator (ADA)

4.1 The ADA shall provide documentation that the ADA is certified by the Manufacturer to install per the Manufacturer's specifications and in accordance with specific requests as to be determined and agreed to by the customer.

4.2 Authorization of dealership may be verified through the company's 3M ID Number.

4.3 The ADA will provide a commercial building reference list of ten (10) properties where the ADA has installed window film. This list will include the following information:

- \* Name of building
- \* The name and telephone number of a management contact
- \* Type of attachment system
- \* Amount of attachment systems installed
- \* Date of completion

### 5.0 Requirements of the Manufacturer

5.1 The Manufacturer will ensure proper quality control during production, shipping and inventory, clearly identifying each product unit with the product designation and run number.

5.2 Materials shall be manufactured by:

3M Renewable Energy Division  
3M Center, Building 235  
St. Paul, MN 55144-1000

### 6.0 Application

6.1 **Examination:** If application of window film is (was) the responsibility of another installer, notification in writing shall be made of deviations from manufacturer's recommended installation tolerances and conditions.

- a) Windows and frames must be examined to ensure that they are fit to receive BP700 Impact Protection Profile in a manner such that the two profile adhesive strips will be perpendicularly opposed to each other and that they will not contact glazing stops or frame gaskets without stretching the profile.
- b) Filmed glass surfaces receiving new attachment should first be examined to verify that they are free from defects and imperfections, and that the film edges extend sufficiently to the frame edges.
- c) Do not proceed with installation until film and frame surfaces have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.

**Important:**

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1-866-499-8857

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# Specifications

## Specifications for 3M Impact Protection Profile, BP700

d) Upon the customer's request, an adhesion test to the frame surface may be conducted by applying a 4 - 6 inch long strip on the frame surface, using the sufficient pressure to adhesive good adhesive wet-out. Allow the Impact Protection Profile to cure for 1-2 days and test adhesion by removing the test strip. If cohesive failure is observed (adhesive residue left behind on the frame surface), adhesion is acceptable; if adhesive failure is observed (clean peel from the frame), adhesion is unacceptable and product is either not recommended, or an adhesion promoter, such as 3M Primer 94, must be used.

### 6.2 Preparation:

- a. Clean surfaces thoroughly prior to installation.
- b. Surfaces must be completely dry prior to application to achieve full adhesion
- c. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Refer to 3M publication, 70-0709-0323-5, 3M Impact Protection Profile Attachment System Installation Instructions.

**6.3 Installation:** The film attachment system shall be applied according to the specifications of the Manufacturer by an Authorized Dealer/Applicator certified to install 3M Impact Protection Profile. Refer to 3M publication, 70-0709-0323-5, 3M Impact Protection Profile Attachment System Installation Instructions.

- a. Each profile piece must span continuously to both sides of the window, within 1/8 inch to the frame edge. Splicing the profile between frame edges is prohibited.
- b. Profile must be aligned and applied by 3M recommended or approved methods and tools to ensure a quality installation.
- c. Corner joints must be fabricated by 3M recommended and approved methods. No part of the profile adhesive shall make contact with an adjacent profile.
- d. Sufficient pressure must be evenly applied along the entire length of the profile to ensure full adhesion from both adhesive strips. A roller tool is required to minimize entrapment of air in the adhesive.

### 7.0 Cleaning

- a. Product shall be allowed to cure for at least 1 - 2 days.
- b. Any visibly defective sections shall be repaired prior to the substantial completion of work..
- c. Common window cleaning solutions may be used within 30 days after installation.

### 8.0 Warranty

The application shall be warranted by the manufacturer (3M) for a period of \_\_\_\_ years from the date of installation. Warranty only applies to new 3M Safety and Security Film installations. The manufacturer warrants that the Impact Protection Profile will maintain its physical integrity and will not change color from the time of original installation. Warranty does not cover failure due to disintegration of the underlying substrate, movement of the structure exceeding specification for elongation and/or compression, or changes in surface appearance due to dirt, contaminants, tampering, or adhesive failure caused by improper installation methods.

### Important:

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# Specifications

## Specifications for 3M Impact Protection Profile, BP950

### 1.0 Scope

This specification is for a window film “flexible-mechanical” attachment system to anchor safety and security window film to a commercial style window frame. The attachment system helps secure filmed broken glass in the window frame, thus providing an increased level of safety and security for a broad range of applications, including basic glass fragment retention, spontaneous glass breakage, seismic preparedness, building envelope protection, bomb blast mitigation, Smash and Grab or Break and Entry events. The attachment system has a consistent appearance, is odorless, and exhibits a fast cure time. The film attachment system shall be called **BP950 3M Impact Protection Profile**.

### 2.0 Applicable Documents

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

The American Society for Testing and Materials (ASTM):

- ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
- ASTM D 2240 – Standard Test Method for Rubber Property – Durometer Hardness.
- ASTM D 624 - Standard Test Method of Test for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- ASTM D 5895 - Standard Test Methods for Evaluating Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders.
- ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.
- ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure
- ASTM G 26 - Standard Practice for Performing Accelerated Outdoor Weathering for Non-metallic Materials Using Concentrated Natural Sunlight.
- ASTM E 1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
- ASTM E 1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
- ASTM F-1642 Standard Method of Test for Glazing and Glazing Systems Subject to Airblast Loadings, as adapted by the U.S. Government GSA Test Standard Protocols
- ASTM F-2912 Standard Specification for Glazing and Glazing Systems Subjected to Airblast Loadings

GSA-TS01-2003 General Services Administration Standard Test for Glazing and Glazing Systems Subject to Airblast Loadings

### 3.0 Impact Protection Profile Requirements

**3.1 Material:** The Impact Protection Profile shall consist of extruded EPDM rubber strip, approximately 1.375 inches wide, with two separate flanges each approximately 0.625 inches wide. Each flange shall contain 3M VHB foam tape, bonded to the EPDM rubber through heat activation and covered with a silicone release liner. The liner side of the VHB foam tape shall contain a pressure sensitive adhesive for bonding the profile to the filmed glass and frame surfaces. The profile shall be black in color. The profile attachment system shall be identified as to Manufacturer of Origin (hereafter to be called Manufacturer).

### 3.2 Material Properties:

- a) Full Adhesion: 1 - 2 days (25°C, 50% RH)
- b) Ultimate Tensile Strength (ASTM D412): > 20,500 psi
- c) Ultimate Elongation (ASTM D412): 400%
- d) Break Strength, Die B (ASTM D624): > 71 ppi
- e) Durometer Hardness, Shore A: (ASTM D2240): 70 pts

### Important:

This product is not approved in the State of Florida for use as hurricane, windstorm, or impact protection from wind-borne debris from a hurricane or windstorm. In compliance with Florida Statute 553.842, this product may not be advertised, sold, offered, provided, distributed, or marketed in the State of Florida as hurricane, windstorm, or impact protection from wind-borne debris from a hurricane or windstorm.

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St. Paul, MN 55144-1000  
1-866-499-8857

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# Specifications

## Specifications for 3M Impact Protection Profile, BP950

3.3 **Uniformity:** Product shall have uniform consistency and appearance.

3.4 **Flammability:** Class A Interior Finish for Building Materials for both Flame Spread Index and Smoked Development Values per ASTM E-84

3.6 **Impact Protection:**

a. As part of a filmed glass system, film attachment shall demonstrate ability to withstand Small Missile A and Medium Large Missile C impact, with subsequent pressure cycling (per ASTMs E 1996 and E 1886) at +/- 50 psf design pressure.

3.7 **Bomb Blast Mitigation:**

- a. GSA Rating of "2" (Minimal Hazard) with minimum blast load of 4 psi overpressure and 28 psi\*msec blast impulse
- b. GSA Rating of "3B" (Low Hazard) with minimum blast load of 10 psi overpressure and 89 psi\*msec blast impulse
- c. ASTM F1642 rating of "Low Hazard" with minimum blast load of 4 psi overpressure and 28 psi\*msec blast impulse

### 4.0 Requirements of the Authorized Dealer/Applicator (ADA)

4.1 The ADA shall provide documentation that the ADA is certified by the Manufacturer to install per the Manufacturer's specifications and in accordance with specific requests as to be determined and agreed to by the customer.

4.2 Authorization of dealership may be verified through the company's 3M ID Number.

4.3 The ADA will provide a commercial building reference list of ten (10) properties where the ADA has installed window film. This list will include the following information:

- \* Name of building
- \* The name and telephone number of a management contact
- \* Type of attachment system
- \* Amount of attachment systems installed
- \* Date of completion

### 5.0 Requirements of the Manufacturer

5.1 The Manufacturer will ensure proper quality control during production, shipping and inventory, clearly identifying each product unit with the product designation and run number.

5.2 Materials shall be manufactured by:

3M Renewable Energy Division  
3M Center, Building 235  
St. Paul, MN 55144-1000

### 6.0 Application

6.1 **Examination:** If application of window film is (was) the responsibility of another installer, notification in writing shall be made of deviations from manufacturer's recommended installation tolerances and conditions.

- a) Windows and frames must be examined to ensure that they are fit to receive BP700 Impact Protection Profile in a manner such that the two profile adhesive strips will be perpendicularly opposed to each other and that they will not contact glazing stops or frame gaskets without stretching the profile.
- b) Filmed glass surfaces receiving new attachment should first be examined to verify that they are free from defects and imperfections, and that the film edges extend sufficiently to the frame edges.
- c) Do not proceed with installation until film and frame surfaces have been properly prepared and deviations from manufacturer's recommended tolerances are corrected. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result under the project conditions.

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# Specifications

## Specifications for 3M Impact Protection Profile, BP950

d) Upon the customer's request, an adhesion test to the frame surface may be conducted by applying a 4 - 6 inch long strip on the frame surface, using the sufficient pressure to adhesive good adhesive wet-out. Allow the Impact Protection Profile to cure for 1-2 days and test adhesion by removing the test strip. If cohesive failure is observed (adhesive residue left behind on the frame surface), adhesion is acceptable; if adhesive failure is observed (clean peel from the frame), adhesion is unacceptable and product is either not recommended, or an adhesion promoter, such as 3M Primer 94, must be used.

### 6.2 Preparation:

- a. Clean surfaces thoroughly prior to installation.
- b. Surfaces must be completely dry prior to application to achieve full adhesion
- c. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Refer to 3M publication, 70-0709-0323-5, 3M Impact Protection Profile Attachment System Installation Instructions.

**6.3 Installation:** The film attachment system shall be applied according to the specifications of the Manufacturer by an Authorized Dealer/Applicator certified to install 3M Impact Protection Profile. Refer to 3M publication, 70-0709-0323-5, 3M Impact Protection Profile Attachment System Installation Instructions.

- a. Each profile piece must span continuously to both sides of the window, within 1/8 inch to the frame edge. Splicing the profile between frame edges is prohibited.
- b. Profile must be aligned and applied by 3M recommended or approved methods and tools to ensure a quality installation.
- c. Corner joints must be fabricated by 3M recommended and approved methods. No part of the profile adhesive shall make contact with an adjacent profile.
- d. Sufficient pressure must be evenly applied along the entire length of the profile to ensure full adhesion from both adhesive strips. A roller tool is required to minimize entrapment of air in the adhesive.

### 7.0 Cleaning

- a. Product shall be allowed to cure for at least 1 - 2 days.
- b. Any visibly defective sections shall be repaired prior to the substantial completion of work.
- d. Common window cleaning solutions may be used within 30 days after installation.

### 8.0 Warranty

The application shall be warranted by the manufacturer (3M) for a period of \_\_\_\_ years from the date of installation. Warranty only applies to new 3M Safety and Security Film installations. The manufacturer warrants that the Impact Protection Profile will maintain its physical integrity and will not change color from the time of original installation. Warranty does not cover failure due to disintegration of the underlying substrate, movement of the structure exceeding specification for elongation and/or compression, or changes in surface appearance due to dirt, contaminants, tampering, or adhesive failure caused by improper installation methods.

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