

Specifications for 3M™ Impact Protection Profile, BP700

1.0 Scope

This specification is for a window film attachment system, or “wet glaze” to anchor the film to the 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 wet glaze shall have low VOC content, low odor and fast cure time. The film attachment system is called **3M Impact Protection Attachment (IPA) Sealant**.

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 C 639 – Standard Test Method of Test for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- ASTM C 679 – Standard Test Method for Tack Free Time of Elastomeric Sealants.
- ASTM C 794 – Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
- ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure.
- 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.
- ASTM F-2912 Standard Specification for Glazing and Glazing Systems Subjected to Airblast.

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 Color (select one):

- a. Black
- b. White
- c. Gray

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The information provided in this report is believed to be reliable; however, due to the wide variety of intervening factors, 3M does not warrant that the results will necessarily be obtained. All details concerning product specifications and terms of sale are available from 3M.

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3.2 Material Properties (as supplied):

- a. Typical Cure Time: < 14 days (25°C, 50% RH)
- b. Full Adhesion: < 21 days
- c. Tack-Free Time (ASTM 679): 60-70 minutes (25°C, 50% RH)
- d. Flow, Sag or Slump (ASTM C 639): 0.1 in.
- e. Specific Gravity: 1.4
- f. Working Time: 10–20 minutes (25°C, 50% RH)
- g. VOC Content: 30 g/L

3.3 Material Properties (as cured – 21 days at 25°C, 50% RH):

- a. Ultimate Tensile Strength (ASTM C 1135): 170 psi (1.17 MPa)
- b. Tensile at 50% Elongation (ASTM C 1135): 65 psi (0.43 MPa)
- c. Tensile at 25% Elongation (ASTM C 1135): 43 psi (0.30 MPa)
- d. Durometer Hardness, Shore A (ASTM D2240): 40 points

3.4 Uniformity: Product shall have uniform consistency and appearance, with no clumping.

3.5 Impact Protection and Pressure Cycling:

- a. As part of a filmed glass system, film attachment shall demonstrate ability to withstand Medium Large Missile C and Small Missile A impact, with subsequent pressure cycling (per ASTMs E 1996 and E 1886) at ± 70 psf design pressure.
- b. As part of a filmed glass system, film attachment shall demonstrate ability withstand structural load requirements of ASTM E330 when tested at ± 120 psf design pressure.

3.6 Bomb Blast Mitigation:

- a. GSA Rating of "2" (Minimal Hazard) with minimum blast load of 11 psi overpressure and 55 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 8 psi overpressure and 42 psi*msec blast impulse

4.0 Requirements of the Authorized Dealer/Applicator (ADA)

4.1 The ADA shall provide documentation that the ADA is authorized by the Manufacturer of the window film to install said window film as 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 glass

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- * Type of film
- * Amount of film 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 identify and label each film core with the product designation and run number.

5.2 Materials shall be manufactured by:
3M Commercial Solutions Division
3M Center, Building 280
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. 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.
- b. 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.
- c. Upon the customer's request, an adhesion test to the frame surface may be conducted by applying a 4 - 6 in. long bead, approximately 0.5 - 1 in. in width, masking one side of the frame surface underneath the strip with tape. Allow the IPA Sealant to cure for 7 days and test adhesion by pulling up on the masked end and a 90° angle. If cohesive failure is observed (sealant residue left behind on the frame surface), adhesion is acceptable; if sealant failure is observed (clean peel from the frame), adhesion is unacceptable, and product is not recommended.

6.2 Preparation:

- a. Clean surfaces thoroughly prior to installation.
- b. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- c. Installer shall take necessary precautions to protect interior furnishings.

6.3 **Installation:** The film attachment system shall be applied according to the specifications of the Manufacturer by an Authorized Dealer/Applicator.

- a. For blast mitigation: minimum 1/2 in. bead overlap on both frame and film (excluding glazing stops or compression gaskets)
- b. For windborne debris protection: minimum 3/8 in. bead overlap on both frame and film (excluding glazing stops or compression gaskets)
- c. To ensure a straight and consistent bead width is achieved, masking tape may be applied to film and frame surfaces before application of 3M IPA Sealant.
- d. With prior approval of the building owner or property manager, existing compression gaskets may be partially removed or trimmed to allow for a thinner bead and stronger anchorage. If removing the gaskets, sections shall be

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trimmed approximately 3 inches in length and inserted with appropriate spacing along all sides of the window to help.

- e. The IPA Sealant shall be dispensed with a caulk gun with nozzle opening diameter sized to match the approximate size of the approximate size of the desired bead width.
- f. A plastic putty knife or other tool with a clean straight edge shall be used to trowel and smooth out the sealant. The complete sealant bead shall be relatively triangular in shape.
- g. Any masking tape used shall be carefully removed within 10 minutes after applying the wet glaze.

7.0 Cleaning

- a. Product shall be allowed to cure for at least 14 days.
- b. Any visibly defective sections shall be repaired prior to the substantial completion of work.
- c. Uncured or excess material on film or frame shall be removed using a cloth dampened with isopropyl alcohol.
- 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 Sealant will maintain its 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 appearance due to dirt, contaminants, or tampering.

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Health and Safety

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. To obtain SDS sheets for 3M products go to 3M.com/SDS, or by mail or in case of an emergency, call 1-888-364-3577 or 1-651-737-6501. When using any equipment, always follow the manufacturers' instructions for safe operation.

Technical Information

Technical information and data, recommendations, and other statements provided by 3M are based on information, tests, or experience which 3M believes to be reliable, but the accuracy or completeness of such information is not guaranteed. Such technical information and data are intended for persons with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. The typical values shown should not be used for the purpose of specification limits. If you have questions about this Product, contact the Customer Service Department at 1-800-852-9722.

Product Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

Warranty

3M warrants that each 3M product will be free from defects in material and manufacture for the length of the product warranty. 3M MAKES NO OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Limited Remedy

If a 3M product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

No Extension of Warranty

In the case of an approved warranty claim, the replacement Product will carry only the remaining term of the original warranty period.

Limitation of Liability

Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, regardless of the legal theory asserted.

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