

Specifications for 3M™ Impact Protection Attachment (IPA) Sealant

1.0 Scope

This product is a window film attachment sealant or “wet glaze” engineered to anchor window film to the frame of a glass window or glass door. The product is referred to in this Technical Specification as “3M IPA” or “Product”. The 3M IPA, combined with the appropriate window film, helps secure broken glass in the window or door frame and helps to reduce the occurrence of flying glass shards in the following applications:

- Spontaneous Glass Breakage
- Break and Entry Incidents
- Seismic Events
- Intentional and Accidental Explosions (intended only for applications to commercial and non-educational government facilities)
- Windstorm, or impact protection from wind-borne debris
- Safety Glazing (annealed glass)

This product should be applied on the interior side of the glass for window films that have been applied on the interior surface of glass; conversely, the product should be applied on the exterior side of the glass for window films that have been applied on the exterior surface of glass.

3M IPA must be used for all windstorm, break & entry, and explosion mitigation window film applications and for all spontaneous glass breakage window film applications on single pane tempered glass. The sealant is recommended for certain other spontaneous glass breakage, safety glazing and seismic applications. Always consult with your 3M Authorized Dealer for the appropriate sealant application.

Product must be installed strictly in accordance with these specifications and 3M instruction guidelines.

2.0 Applicable Documents

The publications listed below form a part of this specification to the extent referenced.

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 3M IPA Requirements

3.1 **Color** (select one):

- a) Black
- b) White
- c) Gray

3.2 **Material Properties (typical):**

- 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 will have a uniform consistency and appearance, with no clumping.

3.5 3M IPA and Pressure Cycling: Refer to the 3M Technical Specifications for individual window films to determine the testing results for that specific film when combined with 3M IPA. 3M IPA as a stand-alone product is not tested for pressure cycling.

3.6 Blast Mitigation: Refer to the 3M Technical Specifications for individual window films to determine the testing results for that specific film when combined with 3M IPA. 3M IPA as a stand-alone product is not tested for blast mitigation.

4.0 Requirements of the 3M Authorized Window Film Dealer

4.1 Documentation. The 3M Authorized Window Film Dealer shall provide documentation that the dealer 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 (to the extent not inconsistent with 3M's specifications and instructions).

4.2 Verification. Authorization of the 3M Authorized Window Film Dealer may be verified through the company's 3M ID Number.

4.3 References. The 3M Authorized Window Film will provide a commercial building reference list of ten (10) properties where the dealer has installed window films. This list will include the following information:

- * Name of building
- * The name and telephone number of a management contact
- * Type of glass
- * Type of film
- * Amount of film installed
- * Date of completion

The foregoing information will be collected and stored in accordance with [3M's Global Privacy Policy](#).

5.0 Requirements of the Manufacturer

5.1 Core Labeling. 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 Manufacturer. Materials are manufactured by:
3M Commercial Branding and Transportation 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 should be made of deviations from manufacturer's recommended installation tolerances and conditions.

- a) Filmed glass surfaces receiving 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 3M 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 3M 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 3M for achieving the best result for the substrate under the project conditions.
- c) Installer shall take necessary precautions to protect interior furnishings for interior 3M IPA applications.

6.3 Installation: The 3M IPA must be applied strictly in accordance with 3M specifications and 3M instructions by a 3M Authorized Window Film Dealer.

- 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 should be trimmed approximately 3 inches in length and inserted with appropriate spacing along all sides of the window to help.
- e) The 3M IPA sealant should 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 should be used to trowel and smooth out the sealant. The complete sealant bead will be relatively triangular in shape.
- g) Any masking tape used should be carefully removed within 10 minutes after applying the wet glaze.

7.0 Inspection and Cleaning

Any visibly defective sections should be repaired prior to substantial completion of work.

Product should be allowed to cure for at least 14 days. Uncured or excess 3M IPA on film or frame should be removed using a cloth dampened with isopropyl alcohol. Common window cleaning solutions may be used 30 days after installation.

8.0 Health & Safety

 **WARNING.** To help reduce the risk of personal injury and/or property damage associated with glass breakage, when working on or near glass surfaces, always use appropriate personal protective equipment and follow the Technical Bulletin “3M™ Window Film Glass Checklist” to identify the risk of glass breakage associated with the application of window film to glass surfaces.

 **CAUTION.** When using any equipment, tools, or cleaning solutions in connection with the processing and application of this Product, always follow the manufacturer’s container labels and/or instructions for safe operation.

9.0 Important Product Notices

IMPORTANT PRODUCT AND APPLICATION LIMITATIONS: Many factors can contribute to potential hazards and damages arising from wind, impact, seismic, explosion, or break and entry incidents, including the window film selected, type and thickness of glass, building construction, exterior pressure, proximity of impact occurrence, quality of window or door frames, intruder size and strength, and type of tools used to gain entry. Certain 3M™ Window Films require the use of 3M™ Impact Protection Attachment (IPA) Sealant on glass window and door frames for windstorm, break & entry, and explosion mitigation applications and for spontaneous glass breakage applications on single pane tempered glass. The sealant may also be recommended for certain other spontaneous glass breakage, safety glazing, and seismic applications. Always refer to the 3M Technical Data Sheets and 3M Technical Specifications to determine whether these combinations are required. **Always consult with security professionals and a 3M Authorized Window Film Dealer prior to selecting any window films to determine suitability for the intended application.**

IMPORTANT STATE OF FLORIDA NOTICE: 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.

10. Warranty Information

Technical Information: Technical information, guidance, and other statements provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license to any intellectual property rights is granted or implied with respect to this technical information.

Product Selection and 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. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer’s application, including conducting a workplace hazard assessment, reviewing all applicable regulations and standards, and reviewing the product label and use instructions. Failure to properly evaluate, select, and use a 3M product in accordance with instructions or to meet all applicable safety regulations may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. Please refer to the Warranty Bulletin for 3M™ Window Films (Flat Glass Applications) and 3M™ Impact Protection Attachment (IPA) Sealant for complete details on warranty coverage, which can be obtained by contacting your 3M Authorized Window Film Dealer or your local 3M sales representative. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. 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.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Commercial Branding and Transportation

3M Center, Building 223-3N-30 St. Paul, MN 55144

3M.com/windowfilm

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