

Specifications for 3M™ Anti-Graffiti Film AG4

1.0 Scope

This product is an optically clear window film. The film, when applied to glass, will help protect the surface from vandalism, graffiti, etching, scratches, and abrasion. This film is intended to be a sacrificial (removable) layer and is accompanied by a one (1) year warranty. The film does not chemically bond to glass and is easily removed when replacement is required.

2.0 Applicable Documents

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

The 1985 American Society for Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) Handbook of Fundamentals.

The American National Standards Institute (ANSI).

ANSI Z97.1 Specification for Safety Glazing Material used in Buildings

The American Society for Testing and Materials (ASTM):

- ASTM E-308 Standard Recommended Practice for Spectrophotometry and Description of Color in CIE 1931 System
- ASTM E-903 Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres
- ASTM D-882 Standard Test Method for Tensile Properties of Thin Plastic Sheet
- ASTM D-1044 Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test)
- ASTM D-4830 Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
- ASTM G-90 Standard Practice for Performing Accelerated Outdoor Weathering for Non-metallic Materials Using Concentrated Natural Sunlight
- ASTM G 26 Standard Practice for Performing Accelerated Outdoor Weathering for Non-metallic Materials Using Concentrated Natural Sunlight
- ASTM E-84 Standard Method of Test for Surface Burning Characteristics of Building Materials

Window. A Computer Tool for Analyzing Window Thermal Performance, Lawrence Berkeley Laboratory

3.0 Requirements of the Film

3.1 Film Material: The film material consists of an optically clear polyester and contain a durable abrasion resistant coating over one surface, and a UV stabilized pressure sensitive adhesive on the other. The film has a nominal thickness of 4 mils (0.004 inches).

3.2 Film Properties, with coatings (typical):

- a) Tensile Strength (ASTM D882): 25,000 psi
- b) Break Strength (ASTM D882): 100 lbs/in
- c) Elongation at Break (ASTM D882): >100%
- d) Peel Strength: 1 lb/inch.
- e) Puncture Strength (ASTM D 4830): 90 lbs.
- f) Abrasion Resistance (ASTM D1044): < 2 percent increase in haze.

3.3 Solar Performance Properties: film applied to ¼" thick clear glass

- a) Visible Light Transmission (ASTM E 903): 86%
- b) Ultraviolet Transmission (ASTM E 903): less than 1% (300 – 380 nm)
- c) Visible Reflection: not more than 10%
- d) Solar Heat Gain Coefficient: 0.81

3.4 Flammability: Upon request from 3M Authorized Window Film Dealer, 3M will provide independent test data showing a Flame Spread Index of 5 and Smoke Developed Index of 10 per ASTM E-84.

3.5 Abrasion Resistance: Upon request from 3M Authorized Window Film Dealer, 3M will provide independent test data showing that the film has a surface coating that is resistant to abrasion such that, less than 5% increase of transmitted light haze will result in accordance with ASTM D-1044 using 100 cycles, 500 grams weight, and the CS10F Calibrase Wheel.

3.6 Adhesive System: The film should be supplied with a high mass pressure sensitive weatherable acrylate adhesive applied uniformly over the surface opposite the abrasion resistant coated surface. The adhesive should be pressure sensitive (not water activated) and physically bond (not chemically bond) to the glass. The adhesive should be essentially optically flat and meet the following criteria:

- a) Viewing the film from a distance of ten feet at angles up to 45 degrees perpendicular to either side of the glass, the film itself will not appear distorted.
- b) It is not necessary to seal around the edges of the applied film system with a lacquer or other substance in order to prevent moisture or free water from penetrating under the film system.

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 3M to install said window film as per 3M'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 Dealer 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

5.0 Requirements of the Manufacturer

- 5.1 **Core Labeling.** 3M will 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:** Examine glass surfaces intended to receive new film and verify that they are free from defects and imperfections, which will affect the final appearance and potentially the as-installed performance. Correct all deficiencies before starting film application.
- 6.2 **Preparation:**
- a) A clean and dust-free work area should be provided when the films are installed. For interior applications, pay attention to ventilation systems which may deposit contamination from other work areas. For exterior applications, pay attention to the weather conditions (e.g., wind) and surrounding sources of contamination.
 - b) The window and window framing must be cleaned thoroughly with a neutral cleaning solution. The surface of the window glass may need to be scraped with stainless steel razor blades with clean, sharp edges to ensure the removal of any foreign contaminants without damaging the glass surface.
 - c) Drop cloths or other absorbent material are to be placed on the windowsill or sash to absorb moisture accumulation generated by the film application.
- 6.3 **Installation:** The film must be applied strictly in accordance with 3M specifications and 3M instructions by a 3M Authorized Window Film Dealer.
- a) Materials will be delivered to the job site with the manufacturer's labels intact and legible.
 - b) To minimize waste, the film may be cut to specification utilizing a vertical dispenser designed for that purpose. Film edges must be cut neatly and square at a uniform distance of 1/8" (3 mm) to 1/16" (1.6 mm) of the window-sealing device.
 - c) Film should be wet-applied using clean water and slip solution to facilitate positioning of the film onto glass.
 - d) To help ensure efficient removal of excess water from the underside of the film and to maximize bonding of the pressure sensitive adhesive, plastic bladed squeegees are to be used.
 - e) Upon completion, the film may have a dimpled appearance from residual moisture. Said moisture will, under reasonable weather conditions, dry flat with no moisture dimples after 30 calendar days from installation when viewed under normal viewing conditions.
 - f) After installation, any leftover material will be removed, and the work area returned to its original condition. Use all necessary means to protect the film before, during and after the installation.

7.0 Guidelines for 3M Window Film Inspections, Cleaning, and Maintenance

Please refer to Technical Bulletin "Guidelines for 3M Window Film Inspections, Cleaning, And Care" for important information on how to inspect, clean, and maintain the installed window film application. IMPORTANT: Do NOT wash windows for the first thirty (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

CAUTION: While 3M™ Window Films, when applied in accordance with 3M instructions, may help reduce the impact of flying glass shards under certain conditions and potentially delay intruders, **THESE FILMS DO NOT PREVENT PROPERTY DAMAGE, PERSONAL INJURY, OR DEATH. WINDOW FILMS ARE NOT BULLETPROOF AND NOT DESIGNED TO STOP INTRUDERS.**

CAUTION: Although certain 3M™ Window Films help block a certain percentage of UVA and UVB radiation and may have received The Skin Cancer Foundation Seal of Recommendation, the efficacy of these films in protecting against skin cancer has not been tested by 3M and **3M™ WINDOW FILMS DO NOT PREVENT SKIN CANCER.**

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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