



## VehicleGARD® | Structural Performance & Regulatory Approvals

### BURGLAR RESISTANCE

- ASTM-1233-Level I
- German DIN 52-290 A1 Rating

### PUNCTURE RESISTANCE

- ASTM D-4830

### FIRE RESISTANCE

- ASTM E-84 Smoke and Flame Spread Index
- ASTM D-1929 Ignition Characteristics

### TOXICITY/COMBUSTION HAZARD

- New York State Uniform Fire Building Code Article 15:

### BLAST RESISTANCE

- W.B.E. 817-001 ASTM F-1642

### ARCHITECTURAL SAFETY GLAZING

- CFR Title 16 CPSC Part 1201
- Category I and II
- ANSI Z 97.1 Unlimited
- British Standard 6202 A,B, and C
- Australian/New Zealand AS/NZ 2208

### STORM WINDOW LOADING/PRESSURE RESISTANCE

- ASTM E-330

### INSULATED GLASS TESTING

- ASTM E-773 and E-774

**LABORATORY CERTIFICATION NO: 94-0323-47**

**TEST SPECIMEN:** Eight (8) 40" wide by 40" high Fixed Lites Using Various Attaching Methods on Glass Surfaces.

**TEST SPECIFICATION:** ASTM E 330-93, "Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by "Uniform Static Air Pressure Difference".

**Specimen No. 1 Test Results**  
**(no film)**

| Title of Test                    | PSF(mph)         | Results          |
|----------------------------------|------------------|------------------|
| Exterior Uniform Structural Load | 30 psf (108 mph) | Pass             |
|                                  | 40 psf (125 mph) | Pass             |
|                                  | 50 psf (139 mph) | Pass             |
|                                  | 60 psf (153 mph) | Pass             |
|                                  | 70 psf (139 mph) | Pass             |
|                                  | 80 psf (165 mph) | Pass             |
|                                  | 90 psf (177 mph) | Pass             |
|                                  | 100 psf          | (See Note No. 1) |

**Note No. 1:** At 98.8 psf (196 mph) the glass shattered.

**Specimen No. 2 Test Results**  
**(film over viewing area only)**

| Title of Test | PSF(mph) | Results |
|---------------|----------|---------|
|               |          |         |

|                                  |                  |                  |
|----------------------------------|------------------|------------------|
| Exterior Uniform Structural Load | 50 psf (139 mph) | Pass             |
|                                  | 90 psf (188 mph) | (See Note No. 2) |

**Note No. 2:** At 72.8 psf exterior pressure the glass shattered but stayed in the confines of the frame. Reapplied pressure and at approximately 60 psf the glass edge deglazed from adhesive tape back bedding. (glass surface remained bonded by the film).

**Special Note:** At this point in testing it was decided to take the specimens directly to failure.

**Specimen No. 3 Test Results**  
**(silicone bead at interior perimeter)**

| Title of Test                    | PSF(mph)           | Results          |
|----------------------------------|--------------------|------------------|
| Exterior Uniform Structural Load | 74.3 psf (170 mph) | (See Note No. 3) |

**Note No. 3:** At 74.3 psf exterior pressure the glass shattered. At this point 2 mil. plastic was applied over exterior surface to seal any openings and the load was reapplied.

**Result :**At 28.6 psf the glass deglazed from adhesive tape back bedding at the top rail..

**Specimen No. 4 Test Results**  
**(clear poly tape bridging the exterior frame perimeter)**

| Title of Test                    | PSF(mph)           | Results          |
|----------------------------------|--------------------|------------------|
| Exterior Uniform Structural Load | 90.4 psf (188 mph) | (See Note No. 4) |

**Note No. 4:** At 90.4 psf exterior pressure the glass shattered and deglazed from frame at the right stile.

**Specimen No. 5 Test Results**  
**(clear poly tape bridging the interior frame perimeter and capped with #1 silicone)**

| Title of Test                    | PSF(mph)           | Results          |
|----------------------------------|--------------------|------------------|
| Exterior Uniform Structural Load | 78.0 psf (175 mph) | (See Note No. 5) |

**Note No. 5:** At 78.0 psf exterior pressure the glass deglazed from left stile corner to midspan of the top rail.

**Specimen No. 6 Test Results**  
**(Identical to No. 5 only using #2 silicone cap)**

| Title of Test                    | PSF(mph)          | Results          |
|----------------------------------|-------------------|------------------|
| Exterior Uniform Structural Load | 104 psf (202 mph) | (See Note No. 6) |

**Note No. 6:** At 104 psf exterior pressure the glass shattered but remained employed in the surrounding members. Stopped test at 187 psf (270 mph) no deglazement observed.

**Specimen No. 7 Test Results**  
**(Standard OEM)**

| Title of Test                    | PSF(mph)         | Results          |
|----------------------------------|------------------|------------------|
| Exterior Uniform Structural Load | 88 psf (185 mph) | (See Note No. 7) |

**Note No. 7:** At 88 psf exterior pressure the glass deglazed at the top rail.

**Specimen No. 8 Test Results**  
**(Standard OEM)**

| Title of Test                    | PSF(mph)         | Results          |
|----------------------------------|------------------|------------------|
| Exterior Uniform Structural Load | 60 psf (153 mph) | (See Note No. 8) |

**Note No. 8:** At 60 psf exterior pressure the glass deglazed at the top rail.

**Conclusion:** In each case the film applied to the glass held the glazing surface intact. Each test that failed resulted in a deglazement failure from back bedding.