

## Installation Instructions

The following instructions represent general and accepted industry practices for product installation. It is not the intention of Insulgard Security Products to exclude or prohibit other installation techniques that are appropriate to specific building designs.

Insulgard Security Products' glazing must be installed in accordance with proper glazing techniques as set forth in the Glass Association of North America (GANA) Glazing Manual and Sealant Manual (most current edition). Clearance recommendations shown must be followed to protect all products from excessive pressure or glass-to-metal contact, which can cause breakage. Install setting blocks not less than four inches long and slightly wider than the glazing at quarter points. Incorporate a weep system into exterior glazing systems. The installation of glass should be considered a finishing procedure. During glazing, product surfaces should be protected from paint, plaster, chemical splash, grinding or welding spatters. Installed (or uninstalled) glazing containing protective masking that is exposed to direct sunlight, must have masking removed within fifteen (15) days to prevent difficult removal, staining or marring. For suggestions on protection, please reference our storage and handling instructions.

Some PVC, EPDM, neoprene gasket, sealant, and setting blocks are not compatible with Insulgard's glazing products and can cause cloudiness and delamination. Care must be taken to ensure the edges of the laminates do not see exposure to prolonged moisture/water and solvents. Please refer to Insulgard's Cleaning Instructions section for cleaning solutions compatible with glass and plastics. Do not apply primers, sealant adhesives, devices, labels, surface applied films directly to the exposed polycarbonate or plastic surface or edge. Assume materials are not compatible unless they have been approved by Insulgard Security Products. The following materials have been found to be compatible:

| Compatible Sealants, Gaskets & Tapes: |                                                                    |
|---------------------------------------|--------------------------------------------------------------------|
| Silicone:                             | DOW DOWSIL™ 795, DOW DOWSIL™ 999A, GE SCS2000 SilPruf™, GE SCS1200 |
| Gasket:                               | Tremco Silicone (70D), Tremco EPDM (60, 70D)                       |
| Butyl Tape:                           | KPTI 303, Isocryl 5600, Tremco 440                                 |
| Setting Blocks:                       | Sanotoprene or Silicone. Silicone recommended.                     |

### Face, Edge, and Bite Clearance (see Figure 1 Below):

| Product:                                                                         | Thickness                      | Face            | Edge            | Bite             |
|----------------------------------------------------------------------------------|--------------------------------|-----------------|-----------------|------------------|
| Laminated Glass                                                                  | 1/4"<br>[6.4mm]                | 1/8"<br>[3.2mm] | 1/4"<br>[6.4mm] | 5/8"<br>[15.9mm] |
|                                                                                  | 1/2" to 1"<br>[12.7 to 25.4mm] | 1/4"<br>[6.4mm] | 3/8"<br>[9.5mm] | 5/8"<br>[15.9mm] |
| Bullet Resistant (All Glass, Glass-Clad Polycarbonate & Laminated Polycarbonate) | 3/4-2 1/8"<br>[19.1-54mm]      | 1/8"<br>[3.2mm] | 3/8"<br>[9.5mm] | 1"<br>[25.4mm]   |

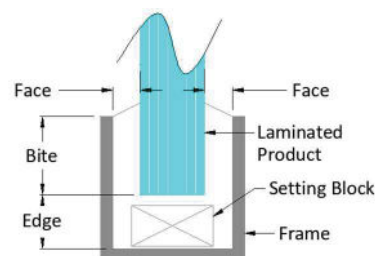


Figure 1 Face, Edge, and Bite.

## Cleaning Instructions for Glass and Exposed Plastic

Glass and polycarbonate must be handled and cleaned properly during the installation process. Glass and polycarbonate products can be permanently damaged if improperly handled or cleaned. Isoclima Specialty Glass, LLC recommends strict compliance with the following procedures.

1. Uniformly apply a mild solution of soap (suggested dilution of few drops to a gallon [a few drops to 1L] of clean water) and water to the surface using applicator methods. Ensure cleaning solution does not enter glazing channel.
2. Rinse with clean water. Ensure water does not enter glazing channel.
3. Remove all liquid from the surface with a soft flannel, microfiber cloth or cotton cloth immediately following the application of the cleaning solutions.

Care should be taken to ensure that no metal, sand, or foreign particles become trapped between the cloth and the substrate (from residual debris on cleaning cloth, glazing itself or airborne). These particles, if allowed to contact the glass or polycarbonate surface, will mar, and damage the glazing. All cleaning solutions should be rinsed with clean water and thoroughly dried from the window gaskets and sealants to avoid the potential for deterioration as a result of the cleaning process. Do not apply cleaners in direct sunlight or at elevated temperatures, do not allow cleaning materials to stay on windows for a long duration which can lead to staining or discoloration. Do not use razor blades, or other sharp instruments, brushes, or squeegees to clean. Do not use abrasive or highly alkaline cleaners. Benzene, gasoline, aerosols, brake fluid, methyl alcohol/methanol, ethyl alcohol/ethanol, chloroform, acetone, methyl ethyl ketone (MEK), xylene, toluene, phenol, cutting oils/fluids, and carbon tetra-chloride should never be used on or near polycarbonate or other exposed plastic surfaces.

Cleaning should be done on an as needed basis to limit accidental exposure, streaking or damage to the windows. Cleaning of adjacent materials including but not limited to framing members, table surfaces, door hardware must use similar process & materials to avoid exposure from incompatible materials. Assume materials are not compatible unless they have been approved by Insulgard Security Products. Cleaning agents found to be compatible with glass and polycarbonate and other exposed plastics are as follows:

| Compatible Cleaners and Detergents:                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|
| Joy (Recommended 1ml Joy to 1L clean water)                                                                                                 |
| Palmolive (Recommended 1ml Palmolive to 1L clean water)                                                                                     |
| Isopropyl Alcohol (50-99% concentration, only diluted with clean water)                                                                     |
| For spot cleaning of difficult to remove residues:                                                                                          |
| WM&P Naptha or Isopropyl Alcohol-after spot cleaning: clean localized area as mentioned above, including rinsing and drying area thoroughly |

Preventing debris and foreign material from contacting the glazing is key for avoid issues and experiencing a long successful service life. For additional details please see Insulgard's Recommended Storage and Protection Guideline.



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## Storage Instructions

The following instructions represent general and accepted industry practices for product storage for glass, laminated glass, and plastic products. Inspect each shipment at time of delivery for damage, abuse, staining from water or moisture or any signs of general neglect. Inspect Tip N Tell® indicators for activation on the outside of the crate. Note any damage or indicator activation on the Bill of Lading (BoL) prior to delivery personnel's departure. Unless glass is broken or dislodged creating a safety risk, open the crate and inspect contents with delivery personnel present when possible.

Laminated products must be protected from sunlight, elevated temperatures, high humidity, heavy winds, rain, snow, sleet, hail or water runoff, cement dust, paint or solvent spray, paint removal, welding or grinding sparks, falling objects or any other damage from general trade activity. We recommend any temporary or longer term storage be done inside in a cool, dry, and well ventilated area. Storage conditions must be under 100°F [38°C] and under 60% relative humidity (RH) with adequate ventilation at all times. Any material stored temporarily outside must be covered with non-perforated waterproof plastic or canvas tarps away from direct sunlight at all times with sufficient air circulation around storage crate. If glazing is not used immediately and temporary outdoor storage is utilized ensure conditions meet the above storage conditions at all times without exception.

Aside from laminated polycarbonates, all products should be stored vertically (less than 5" from vertical) on a level surface (do not lean or lay flat). Laminated product should not be stored horizontally. Storage in factory shipping crates includes proper separation, if material is removed from crates for storage, ensure proper separation to avoid product to product contact.

Please note factory shipping materials are not waterproof and/or invulnerable to the elements. Storage conditions must be taken seriously by all job site representatives to ensure a long and successful service life. All glass and plastic (laminated or monolithic) must be stored and protected at all times to avoid, staining, delamination, discoloration, or other undesirable effects.

## Handling Instructions

Glass and plastic (laminated or monolithic) must be safely handled at all times and ensure proper personal protective equipment (PPE) is used at all times. Before opening, lean (≈7") container against wall or other suitable support to prevent glass from falling forward. Open side of crate marked "OPEN THIS SIDE".

Product can be removed by hand, manipulators, manual vacuum cups, or clean straps, and spreader bars. Manual or power cups should not be used on interior/safe side of Spallshield® composite laminates. Manual or power cups can be used on exposed polycarbonate, for safety we suggest factory applied protective masking film be removed. All manipulators, power vacuum cups or manual vacuum cups must be clean and free of debris before contacting the glazing. Insulating glazing should be handled by the heavier component (typically this is the interior laminate-opposite of "GLAZE THIS SIDE OUT"). Avoid suspending glass for long durations on cups or straps. For additional information, please contact Insulgard Security Products.

Ensure handling or work area provides enough room to safely maneuver glass and is free from debris or obstacles that may hinder handling. Take steps to reduce handling and contact with the glazing when possible.

Do not set glass or plastic products on corners during handling, do not allow contact with metallic tools/equipment or contact with other glass and plastic (laminated or monolithic) products. Exposed plastic surface (Spallshield® and polycarbonate) may look and feel like a glass product but will not have the inherent abrasion and chemical resistance of a glass product. Handle Spallshield® and exposed polycarbonate with care at all times to avoid damage.

Do not use razor blades, sharp instruments, brushes, or squeegees on Insulgard glazing products. Do not use abrasive or highly alkaline cleaners. Benzene, gasoline, aerosols, brake fluid, methyl alcohol/methanol, ethyl alcohol/ethanol, chloroform, acetone, methyl ethyl ketone (MEK), xylene, toluene, phenol, cutting oils/fluids, and carbon tetra-chloride should never be used on or near polycarbonate or other exposed plastic surfaces.

For more detailed cleaning instructions (or Installation Instructions), please reference our installation and cleaning instructions.

## Protection Instructions

Product education and physically separating the glazing from contact or exposure to construction processes and materials is always suggested over temporary protective measures. In the event additional protective measures are required, please use the instruction below as a guideline to further protect Insulgard glazing products.

Clear (coated or uncoated, 1/8-1/4" [3.2-6.4mm] suggested thickness, non-tinted) polycarbonate or acrylic (PMMA) can be used for protection when mechanically fastened to framing members not less than six (6) inches [152.4mm] from interior surface. Clear protective material must be at least three (3) inches [76.2mm] short on top and bottom edges to promote air flow; however, it may span the entire width of glazing to reduce contact. These protective substrates will serve as a mechanical barrier and protect glazing from accidental contact while allowing natural light and glazing to be continuously monitored for damage. Opaque or tinted substrates can cause an increase in solar absorption and subsequently higher internal laminate temperatures. This can lead to delamination, discoloration bubbles, glass breakage and/or other adverse effects.

Installed or uninstalled glazing containing protective masking that is exposed to direct sunlight must have masking removed within fifteen (15) days to prevent difficult removal, staining or marring. Interior glazing or glazing not exposed to direct sunlight must have factory protective masking removed within twelve (12) months. Glazing must be dry at all times to avoid moisture build up under protective masking. Protective masking is meant to be a disposable sacrificial barrier to protect against minor abrasions and marring, it will not serve as an impermeable barrier against severe mechanical damage or chemical attack.

Do not apply spray on protection. Do not apply opaque protective materials (plywood, oriented strand board, particle board, fiberboard, cardboard, drywall, etc.) directly on, behind or in front of glazing. This can increase the chance for abrasions/scratches and cause increased solar absorption increasing the probability of breakage. Product surfaces should be protected from paint, plaster, chemical splash, grinding or welding spatters at all times.

Education to all construction affiliates, signage and physical barriers can reduce unwanted damage to Insulgard's glazing products. Laminated glass and plastics are sensitive composites, they must be treated as such to promote a long service life.



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