

## Laminated Glass

Laminated glass consists of two or more lites of glass and one or more bonding interlayer. The lites and the bonding layer are fused together through either an autoclave process or a chemical curing process.

### **How the product works:**

Laminated glass does not shatter. When broken by impact, the interlayer tends to retain the glass fragments, minimizing the risk for injury from sharp edges and flying or falling glass, and strongly resists penetration by the impacting object or person. In many applications, laminated glass is the logical choice for a safety glass, due to its break “safe” characteristics. It is of equal strength as annealed glass of the same thickness and may be used in monolithic glazing or as part of an insulating glass unit. Typical safety applications include doors, panels adjacent to doors, glazed panels, balconies, elevators, railings, and skylights. Laminated glass effectively resists glass fall-out from windblown projectiles in hurricane-prone areas and after a blast event. It is an effective barrier to unwanted noise and can provide various levels of security protection including protection from break-ins, physical attack, and bullets. The optical quality, durability and maintenance of the laminate are virtually the same as regular glass.

### **Design Considerations:**

Laminated glass can be configured with annealed, tempered, heat-strengthened, chemically strengthened, wired, tinted, reflective glass, one-way and two way mirrors can be incorporated into an insulating glass unit. Custom drilling, including speak holes and pass-through holes, is available. Depending on the number of glass plies and interlayer thickness, laminated glass can be used in locations requiring burglar resistant, physical attack, and bullet resistant protection. The use of laminated glass in hurricane-prone areas can reduce the effects of windstorms on buildings by preserving the integrity of the building envelope and by preventing glass particle fallout. Laminated glass also resists glass fallout in earthquakes. The level of protection afforded is a function of the thickness of the interlayer and the framing detail, the thickness and number of plies of glass, the size and strength of the glass, the temperature of the glass, and the method of installation.

### **Edge Finish:**

Laminated glass can be produced with edges that are clean cut, swiped (seamed), flat ground, and polished.

### **Installation Guidelines:**

When installing laminated glass, the glazing system should provide for at least the minimum recommended face and edge clearance as well as nominal bite. Proper allowance must be made for glass, metal, and erection tolerances, plus expansion and

contraction. Restricted edge clearances can result in glass damage from glass-to-metal contact when normal building movements and thermal expansion occur. Glass should be set on two 80-90 shore A durometer ¼” setting blocks. The width of the setting blocks should be of sufficient width to fully support the laminated construction thickness. The edges of laminated glass must not be exposed to organic solvents, or standing water that can react with the plastic interlayer. Many polysulfide, silicone, and butyl rubber sealants may be used for glazing, but should be checked for compatibility. All sash must be weeped to the outside to allow water drainage. Prolonged exposure to water, water vapor, solvents, or solvent vapors may cause delamination or haziness around the periphery. Additional information concerning glass setting conditions can be found in the Glass Association of North American (GANA) *Glazing Manual* ([www.glasswebsite.com](http://www.glasswebsite.com)).