



Glass Informational Bulletin

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Protecting Glass Against Weld Splatter

Introduction

Glass fabricators take great care during manufacturing to ensure that the products that they make meet the highest quality standards. They carry these same standards to the packaging area, taking every precaution to deliver the products to the project in good condition. At the jobsite, there are many activities that are performed that can have negative effect on glass products, especially after glass is installed. One of these is welding, a common activity and the subject of this bulletin.

What Happens to Glass When Exposed to Weld Splatter?

Splatter from nearby site welding or grinding/cutting operations can cause pitting of the glass surface and in some cases hot metal particles can fuse into the surface as seen in Figure 1. The pitting may be small in some cases or deep enough to penetrate into the glass's compression layer in others as depicted in Figure 2. In either case, the strength of the glass is diminished. The basic tensile strength or modulus of rupture for annealed glass is 6000 psi and 2 to 4 times that level for heat-treated glass. However, its strength can be significantly reduced by damage to its edges or surface, thereby reducing its ability to resist uniform loads such as wind loads.

Surface damage such as weld splatter can lower the tensile strength of the glass which increases the probability of breakage at loads below that of the design load for the building. Glass stresses under uniform loads are greatest along the lines of maximum deflection. These occur along the center line of the glass and along diagonal lines extending from the corners under typical trapezoidal bending behavior. Surface damage caused by weld splatter in these regions of the glass will significantly reduce the strength of the glass and its wind load resistance.

Weld splatter can be very visible on reflective coatings. This damage cannot typically be removed, thereby affecting the overall appearance of the installed glass.



Figure 1
Weld Splatter on Glass

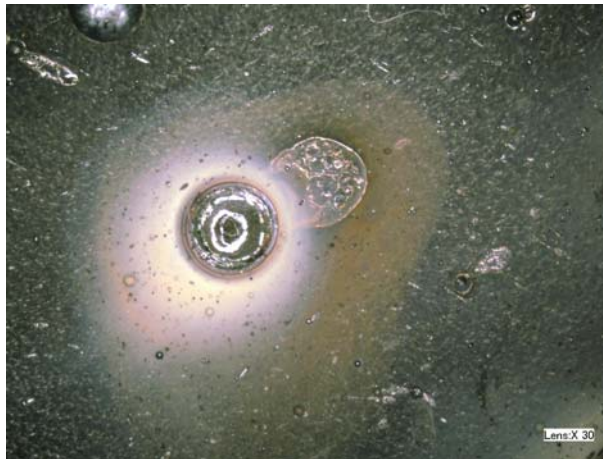


Figure 2
Close-Up of Weld Splatter on Glass

Different Ways to Protect Glass

One of the oldest methods of protecting glass from welding splatter on a jobsite was to cover the glass with plywood during welding operations. While effective the plywood is heavy and difficult to secure into position.

Today there are numerous products designed to protect materials from welding splatter. Woven 100% glass yarn, with a chemical treatment to increase resistance to heat, is available in bulk rolls. This glass yarn is woven into a drape material and resists high temperatures. Chemically treated woven acrylic drapes are available and offer good protection from medium heat. Canvas treated with a fire resistant chemical and specially treated PVC can be used as protection from light duty welding. Treated welding paper can be used for light duty application on vertical surfaces only. All these products are designed for general applications and are not specific to

glass protection. While not as difficult to install and remove as plywood, these materials do require some effort.

Polyurethane films with a flame retardant specifically designed for protecting glass is becoming increasingly available in various roll sizes. These materials have a low tack adhesive and are easier to install and remove than some of the other materials. They provide protection from all but the most severe welding applications. Polyurethane films are a single use only product.

Conclusion

As is usually the case, prevention is far better and less expensive than the actions required to fix weld splatter damage. Proper planning and execution of steps to protect the glass and framing systems from exposure to weld splatter is the best course of action.

Consult the *Tech Center* section of the Glass Association of North America (GANA) website (www.glasswebsite.com) for additional Glass Informational Bulletins and flat glass industry reference resources.

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