TG-11 (6-24-05)

TECHNICAL BULLETIN
Edgework

Clean Cut Edge - Flat glass is typically "cut" by a process of scoring the top surface of a sheet of glass with a diamond or hardened metal wheel, and then flexing the glass along the score thus stretching the top surface causing the glass to fracture along the score from the top surface downward. The resulting edge is irregular and sharp. (Fig. 1)

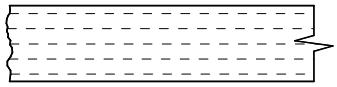

Figure 1. Clean cut edge

Seamed Edge - Aside from being dangerously sharp, a clean cut edge contains checks or microscopically small cracks that can cause breakage if the glass lite were to be heat-treated in a tempering furnace. Prior to tempering or heat-strengthening the glass edges must be seamed. Seaming is the grinding, usually with an abrasive belt, of the sharp edges of a piece of glass, at a 45 degree angle to the surface. The result is a slight bevel or arris with a rough matte finish at the edges. A seamed edge is not suitable for applications where the edge will be exposed. (Fig. 2)

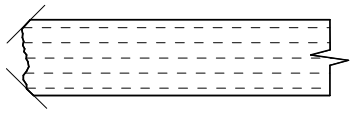

Figure 2. Seamed edge

Polished Edge – Exposed glass edges and butting edges should be requested as flat polished. Diamond abrasive wheels are used to grind the glass edge to a uniform flatness with a small bevel or arris. Next polishing wheels smooth the edge to a transparent finish. (Fig. 3)

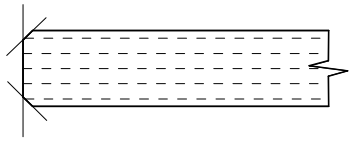

Figure 3. Flat polished edge

Mitered Edge – A glass edge may need to be mitered if the intention is to form an angle between two adjacent lites. The same process as described for polished edges is used for a mitered edge except that the grinding and polishing wheels are set at the required angle between 1° and 45°. (Fig. 4) Two adjacent lites forming a 90° angle can be achieved either by mitering each lite at 45° (Fig. 5) or by using a flat polished edge and glazing the lites in a manner that forms a lap joint (Fig. 6). Silicone joints at corners are recommended to prevent glass to glass contact that might occur due to flex inherent in butt joint glazing.

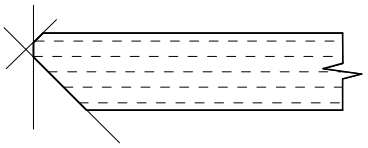

Figure 4. Mitered edge (45°)

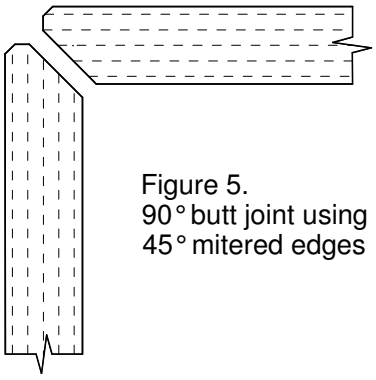

Figure 5.
90° butt joint using
45° mitered edges

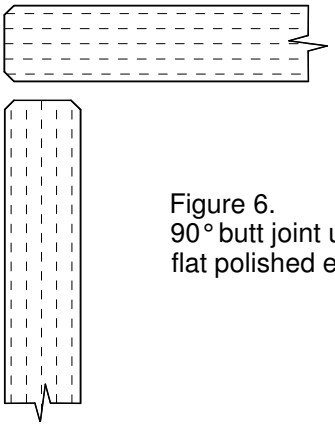

Figure 6.
90° butt joint using
flat polished edges

TECHNICAL BULLETIN
Edgework (Cont'd)

Flares – When a lite of glass is scored and broken the ideal result is a break that runs through the thickness of the glass at a perfect right angle to the glass surface. This yields a relatively square edge. The more perfectly annealed the glass is during the manufacturing process, the more likely it is to break like this. If the raw glass contains stresses, or if properly directed and uniform pressure is not applied to it when broken, the result can be a break that does not run at a right angle from the top surface to the bottom. The outcome is a protrusion on the edge of the lite of glass. (Fig.7) This can occur at a single point along a break edge or the entire edge can exhibit this characteristic. Flares can be more noticeable in thicker glass and arch or radius pattern shaped edges. The reverse of a flare can just as easily occur. (Fig. 8) **A flare (or reverse flare), however, is not a cause for rejection as long as the overall size of the glass lite, at its longest point, is within the size tolerance allowed by the ASTM specifications.** See Technical Bulletin TG-2 for length and width dimensional tolerances by glass thickness.

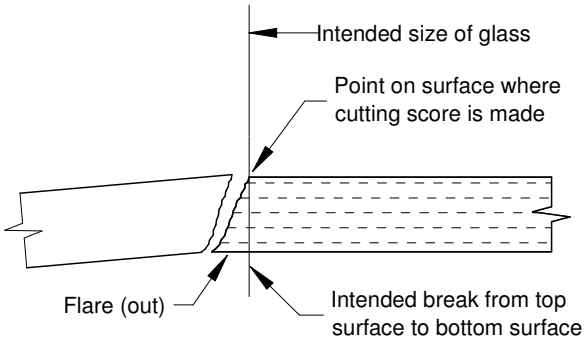

Figure 7. Flare

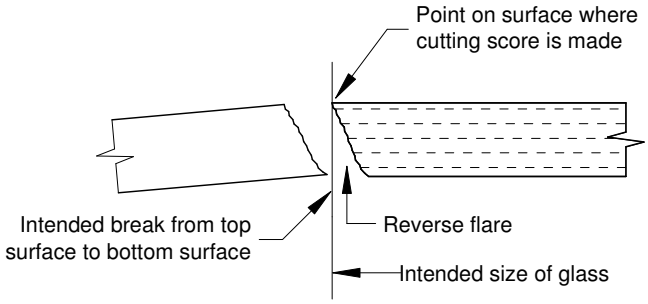

Figure 8. Reverse flare

If an edge with a flare is to be polished, it may require more glass to be ground off the edge than usual, in order to uniformly remove evidence of the reverse flare that might otherwise result in a "shiner" or unpolished indentation. In the case of a reverse flare the resulting overall size of the glass may be reduced from the intended size. **This is not cause for rejection as long as the overall size is within the size tolerance allowed by the ASTM specifications.** (Fig. 9)

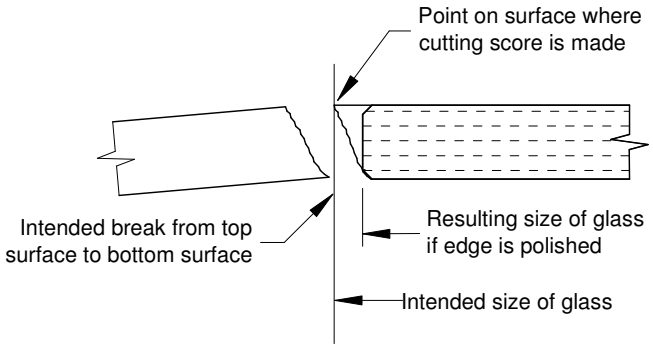

Figure 9. Polished edge with flare