

Architectural Glass Fabrication Today

From Your Friends
At
Bacon & Van Buskirk

The background of the slide is a solid blue color. In the lower right quadrant, there are several decorative elements consisting of concentric circles in a lighter shade of blue, resembling ripples in water. These circles are of varying sizes and are positioned in a way that they appear to be spreading out from the bottom right towards the center of the slide.

Float Glass

- Clear and tinted continuous molten flowing ribbons of glass emerge from large float tanks. As clear and tinted glass emerges from the float tanks, the ribbons are quickly cooled, cut into sheets and termed as 'annealed' glass. When broken, 'float' glass or annealed glass breaks into large, dangerous shards. From the manufacturer's plants, the annealed glass may be sent to fabricators who process glass in a number of ways to produce commercial and institutional glass products.

See below a continuous ribbon of glass emerging from the glass furnace.



Processing Flat Glass

- There are many fabrication processes that are used with glass. In commercial and institutional buildings, the most common products used are annealed glass, insulated glass, tempered glass, laminated glass and coated glass.
- Glass may be designated as safety glass, depending upon location or application. Tempered glass and laminated glass are two common forms of safety glass. Tempered glass is 4 times stronger than annealed glass, and breaks into small harmless fragments. Your vehicle's side and rear windows are tempered glass.
- Laminated glass is a multi-ply glass 'sandwich' of glass and polyvinyl sheet bonded together with heat and pressure to form a single glass sheet. Laminated glass takes repeated impacts to penetrate and tends to stay in the framed opening. Your vehicle's windshield is laminated glass.

The glass and clear pvb plastic plys below are entering an autoclave. The vacuum pressure & heat form the plys into laminated glass.



Processing Flat Glass

- Glass used in most commercial and institutional buildings are specified and installed as either monolithic glass (“single-pane”) or insulated glass. When two panes of glass are joined together as a sealed unit with a dead air space, the insulated glass (“double-pane”) cuts thermal energy transmission through glass in half.
- Reflective and Low-e coatings on glass are a complex assortment of spray-applied metallic alloys made by a variety of manufacturers to produce a number of different appearances and performance characteristics in architecture. The alloys used in the reflective and low-e coatings cause the wide variety of coatings to each have a different visual appearance.

Reflective coatings are widely used for solar heat gain control and create unique aesthetics.



Standard Commercial Products

- **Standard:** mass produced glass products; not job-specific. Pyrolytic or “Hard coat” reflective coatings and Pyrolytic low-e coatings are mass produced, easy to obtain, and usually cost less. The pyrolytic reflectives do a good job of solar resistance and thermal insulation. Pyrolytic coatings are applied as molten glass is cooling; thus making them part of the glass. Pyrolytic coatings are scratch resistant, and can be used as a single pane application, exposed directly to weather and elements.
- 1st Lowest Priced Standards: Clear, & Tints = Bronze, Grey, Green
- 2nd Lowest Priced Standard Spectrally selective tints: blues, greens, blue-greens, greys, dark greys
- 3rd Lowest Priced Standards Pyrolytic “Hard-coat” Reflectives: Bronze/Golds, Blues, Greens, Blue-greens, Greys
- Some spectrally selective tints or pyrolytic reflectives are made in smaller volumes, are more expensive, and could be considered custom.

Standard Products

- “Standard” Pyrolytic “Hard-coat” Low-E coatings and newer Post-Temperable Low-E coatings are typically used on clear inboard lites of insulated glass and increase insulation factors by approx. 15% or more. Within an insulating glass, a clear inboard lite of Low-E coated glass can be used in conjunction with an outboard glass lite of clear, tinted, pyrolytic reflective or soft-coat reflective glass. This also adds more cost per square foot to the glass units on a project.

Custom Glass Products

- **Custom:** Made specifically per project. Sputter-applied or “Soft-coat” reflective films and Soft-coat Low-e coatings are made per order, have set-up charges, are usually denser, and usually offer greater solar resistance and thermal insulation. Soft-coatings will oxidize and be scratched; must be encapsulated within insulated glass units.
- “Customs” are Soft-coat Reflectives on clear and tinted glass along with Soft-coat Low-E coatings are generally more expensive, have greater performance specifications and take longer to obtain as they are made per project. Architects are often looking for more subtle appearances in glazings, so custom reflective coatings on clear and tinted glass are used in many commercial and institutional applications



Custom Glass Products

- Another custom application uses colored polyvinyl innerlayers within laminated glass. Colored polyvinyl innerlayers within laminated glass produces striking effects in both tinted and reflective glass applications.
- Glass may be produced in a variety of thickness. Edges may be finished in a number of different polishes and contours. Holes may be drilled into glass and patterns may be cut using glass. Sheet Plastics such as acrylics and polycarbonates may be laminated between glass plys to form threat-resistant, ballistic-resistant and blast-resistant products.

Call Bacon & Van Buskirk!



The fabrication techniques used to process commercial and institutional glass are numerous.

**Questions? Call Bacon & Van Buskirk
to help you regarding your next project!**

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