



Acrylic fabrication beyond decorative

PLASTICS
FABRICATION

by Alvin Notowich

Almost everyone is familiar with decorative acrylic fabricated items such as display cases, point-of-purchase displays and even furniture. Far fewer people envision the vast depth of possibilities in the use of acrylic for more industrial, or specialty commercial applications.

Perhaps one of the most common industrial applications is the use of acrylic to produce tanks. These tanks are used for trade show displays, research studies and as manufacturing equipment (figure 1).

These cylindrical vessels are fabricated by heating the acrylic sheets in a large, hot air circulating oven and placing the components on molds that are covered with a material to prevent scratching and marking of the sheets. After cooling, the half cylinders, or half cones, are removed from the molds and cemented together. A reinforcing strip is cemented over the joints. The outlet is a threaded coupling that was machined from a clear acrylic rod, and cemented to the center of the cone. The vessel is flanged between the

cone and the cylinder. This is where the tank will rest on a metal support ring. For circumferential strength, a flange is also cemented around the top of the cylinder.

Often the acrylic is used in combination with other materials to create the end product. Pictured below is a clear rectangular acrylic tank which is joined to the piping with a conventional expansion joint. This relieves the stresses which may be exerted on the acrylic side wall due to the expansion and contraction of the pipe. Also, the clear PVC pipe shown in the photo is utilized with this vessel as well.



Clear rectangular acrylic tank which is joined to the piping with a conventional expansion joint.

Often, flow patterns and interactions can only be studied in clear equipment. Figure 2 shows a rectangular vessel with a removable lid and a tapered bottom. The top and bottom flanges allow for straight through flow, while the flanged, 90-degree injection nozzle will inject another product into the center of the flow pattern. Fabrication of this item included CNC routing of parts, heat forming a rectangular cone, cutting of tubes to length, cementing and polishing the assembly.

On the other hand, there are many custom industry applications in the non-industrial world that border on decorative, but have very functional uses. One such industry is the world of casinos with uses such as tumblers, counting tables, cash trays and roulette wheel covers.



Figure 1. John Cox of PLASTICO displays an acrylic tank used in the revitalization of ion exchange resin used in deionized water applications.



Figure 2. Rectangular acrylic vessel with a removable lid and a tapered bottom.

Counting tables for casinos are constructed in many different ways. They can be fabricated completely from clear acrylic to serve as permanent structures (figure 3). Others types of counting tables can be fabricated with removable legs made from plastic pipe, steel pipe and even clear acrylic tube.

The tumblers are visually important to the marketing element for the casinos. While some casinos have ventured into computer drawings, many have reverted to the use of the tumblers to add back crowd excitement. Tumblers range in size

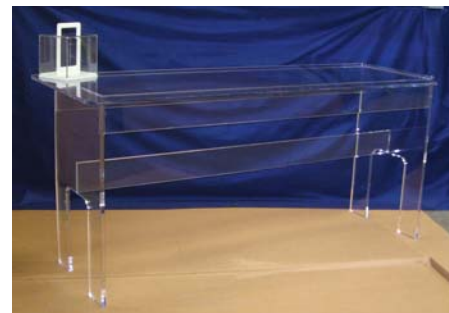
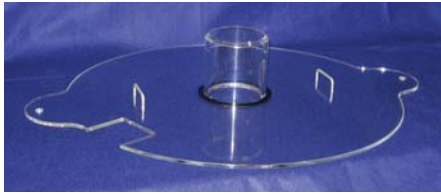


Figure 3. Clear acrylic counting table used in the casino industry.



Acrylic roulette wheel covers and cash trays.

from table top models to very large rolling units. Figure 4 shows a tumbler with an acrylonitrile-butadiene-styrene (ABS) covered wooden base, line bent acrylic body and acrylic cylindrical end panels. Using ball bearing bushings allows almost anyone to be able to turn a heavily loaded drum.

There are many opportunities for the utilization of acrylics in furniture, product displays, architectural uses, transportation, museum displays and more. The opportunities for acrylic applications are only limited by the ability of the designer to recognize the capabilities of the product, and the fabricator's ability to capitalize on some of their unique tools. Together, they can create products that are beyond the realm of other materials. ■

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Figure 4. Karen Sadler of PLASTICO displays a tumbler fabricated with an ABS covered wooden base, line bent acrylic body and acrylic cylindrical end panels.

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