Multi-Wall Polycarbonate: Decreasing the Weight and Increasing Options

by Peter Daumeyer

Tim and Patti are building their dream home on an island just off the Florida coast in the Gulf of Mexico. With hurricanes prominent in this region, they have to build the house on stilts high above the recommended storm surge levels. To allow for the most natural light as well as the lightest material in the industry, they turned to multi-wall polycarbonate. They were able to run the panels vertically, using the material’s locking profiles to connect sheet to sheet. This gave a nice, clean look to their see-through walls. This not only reduced the weight a large amount, it also gave them impact resistant strength for anything a hurricane could throw at them.

Many contractors, as well as do-it-yourselfers (DIY), are turning to multi-wall polycarbonate sheet to build structures such as that perfect canopy over their back patio. Those with green thumbs are turning to structured sheet to build their own greenhouses. Some are just looking for a way to cover their beautiful wood pergola or porch, to be able to enjoy the outdoors when the outdoors isn’t so enjoyable. The sheets are starting to become a staple with architects and interior designers for projects that are doing more than keeping the rain out.

About the materials
Multi-wall polycarbonate comes in several gauges, from 6mm through 25mm in thickness. The sheets are produced up to 10 meter lengths, with both 4 foot and 6 foot widths. The sheets can be sold in optimal widths depending on the width of the application. Due to the lower weight of the multi-wall material, square foot costs are often much less than monolithic sheet of the same gauge. Multi-wall sheet comes with either one or two sides UV stabilized to protect it from the sun. They are available in clear, bronze and ice, but more and brighter colors are being drawn into designs.

A look at profiles
Two materials are used in the profiles: aluminum and polycarbonate. The aluminum extrusions are heavy duty, usually finished with a white powder coat. They are best used when the project is going to be commercial or in a larger project. Polycarbonate profiles, being lighter to work with, are usually recommended when the project is smaller or for a DIY job. The polycarbonate profiles offer a cost savings over the aluminum.

Capping the ends of the sheet with vent tape and U-Channel will make sure most moisture and dust stay out. The U-Channel is available in polycarbonate and aluminum. All polycarbonate profiles have a UV inhibitor added to the mix. Also needed are screws and washers.

Polygal’s 16mm SG and Mega-Lock Profiles make a great vertical wall. Photo by Martin Gold.
Planning
There are several things to consider when looking at the plans for a multi-wall polycarbonate project. The spacing of the pur- lins or rafters will help decide the optimal gauge for the sheets when doing a canopy. If the structure is already built, there are easy mathematical steps to use to figure out that gauge. If the structure is not built, it can be designed around the sheets. Keep in mind the different widths available to maximize the efficiency of possibly using wider sheets. In certain climates, you will also have to look at wind loads or snow loads before deciding on the optimal gauge. Always make sure the plans include at least a 10 percent slope to the sheets for proper drainage.

YouTube videos and installation instructions often give clear guidelines to follow when designing a project. Capping the sides of the product will finish it with a clean edge and will make any consumer of the product happy with the results.

Functionality
Multi-wall polycarbonate sheet is much lighter than monolithic PC. But with the structure of the flutes, the sheets can withstand a better impact than solid sheet. This has led to many panels being used for hurricane-safe window systems. The weight difference between multi-wall polycarbonate sheets and glass is incomparable. Plus, multi-wall polycarbonate’s strength is much better than glass.

Vertical walls
Multi-wall polycarbonate sheets have been used for interior and exterior walls for quite some time. The flutes provide a nice, clean look to divide cubicles or rooms. They block out space and create an aesthetically pleasing look. The lightweight products are easily designed to be stood up with or without their designed profiles. Where natural light is concerned, the enhanced visual effects of daylight on the product will make it stand out against standard architectural products.

Lighting the panels
You can add LEDs to the product and watch it glow. Most designers know how to run the light up and down the flutes with multi-colored lighting. By simply lighting the underside or by backlighting, an entire wall can be enhanced and the visual effects can be changed. With the flutes reflecting light in multiple directions, it is stretched even further throughout the room. By using different colors of sheets, a room’s look can be change immediately. Add in the LED lights, and the color can always be different.

More opportunities
Multi-wall polycarbonate panels have been around for de- cades. However, their usefulness is just starting to be tapped. There are plenty of opportunities to use this material outside of the typical canopy or roof over a backyard. Designers can speak with plastics distributors about the project requirements, so you can reap the benefits of multi-wall polycarbonate sheet.

Peter Daumeyer is a sales representative with CartierWilson LLC. For more information, contact CartierWilson LLC, 2160 Kingston Court, Suite H, Marietta, GA 30067 USA, (770) 644-0000, fax (770) 644-0008, www.cartierwilson.com.

LED Light is carried through Polygal’s Ice product with great effect. Photo by Cristian Ivanescu.