

Versatility in plastics

PLASTICS IN
RECREATION

by Andrea Copithorne

The extensive range of premium quality plastic materials available today provides the opportunity to create exciting and diverse projects for recreation. From polycarbonate sheet in a range of solid, profiled and multi-wall products, to a variety of matt, gloss, composite and anti-static foam PVC sheet, to solid acrylic sheet and opaque, flat polycarbonate sheet, the possibilities are limitless!

Polycarbonate in particular is an extremely versatile product. Solid, flat polycarbonate is easy to mold, which made it the ideal material for reproductions of an American classic, the world-famous Wurlitzer jukebox. Created using solid polycarbonate sheet in 3 and 4 mm thicknesses, the polycarbonate was used to form the transparent casings of the jukeboxes. Using polycarbonate ensured that the casings retained their optical clarity of over 80 percent even after processing, with the added benefit of excellent fire rating ensuring the jukeboxes were safe for use indoors. Polycarbonate can withstand a continuous service temperature of up to 100°C (212°F), can easily be thermoformed and fabricated, and can be worked with standard workshop equipment, ensuring a successful result for the Wurlitzer reproductions.

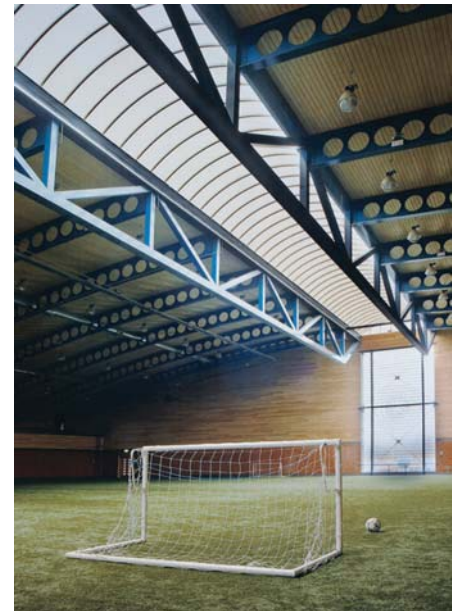
Polycarbonate's ease of fabrication also proved successful at a project on a slightly

larger scale. The design for a football training academy for Glasgow Rangers Football Club was developed to ensure maximum natural daylight within and to enhance the internal environment and playing conditions. Conical roof structures at each of the two entrances, with an 8.4 m radius and 5.8 m radius respectively, were double glazed using solid polycarbonate, allowing a flood of natural daylight into the entrance areas, transforming them into dramatic and bright spaces. Polycarbonate's ability to be cold-bent on site or pre-formed beforehand made it ideal for use in the domes, combined with its impressive impact resistance up to 200 times that of glass with only half the weight.



Marlon FS solid polycarbonate created impressive dome rooflights for a football club in Glasgow, Scotland.

Another feature of the training academy is a large, 5.8 m wide x 47.8 m long glazed vault rooflight, again produced using solid polycarbonate sheet. It was created over the indoor pitch, to give a high volume of evenly spread direct natural light and provide a good playing environment. Polycarbonate is available in a wide variety of tinted options and this also proved useful, as care was needed to achieve the right combination of natural light into the building without glaring brightness. The designers also wanted the rooflight to tone in with the exterior envelope, so they used a combination of a 6 mm thick clear outer skin and 3 mm thick bronze inner skin to achieve the perfect result.



A vault rooflight from Brett Martin proved ideal for Glasgow Rangers Football Club's training academy.

Similarly, Manchester City Football Club utilized two forms of polycarbonate to create the perfect stadium. The club started the 2003-2004 football season in a new £135 million state-of-the-art stadium, after moving into the City of Manchester Stadium from Maine Road. Built originally for the 2002 Commonwealth Games, some major re-working of the stadium was completed before it was ready for the football club. This included finishing the unique "bowl" design of the stadium and fully completing the curving canopy over the seating. The front third of the canopy, approximately 1,500 linear meters, is produced from profiled polycarbonate, profiled to match the metal sheet that forms the remaining two-thirds of the roof. The 1.5 mm thick transparent sheets were specially manufactured to accommodate the curvature of the canopy through three planes, whilst still allowing easy on-site installation into the roof support system.



Marlon FS solid polycarbonate from Brett Martin Ltd. was used to produce transparent jukebox casings.

Profiled polycarbonate can be supplied with co-extruded UV protection which not only cuts out 98 percent of harmful UV but also offers a guarantee of continued performance in prolonged outdoor exposure, making it the perfect option for recreational stadiums. As with all forms of polycarbonate, it provides superb optical clarity, high impact resistance and can withstand temperature extremes without any significant deterioration of its mechanical or physical properties. Clear and tinted forms will also allow either maximization or control of light transmission. Good workability combined with impressive durability and excellent fire performance creates a highly versatile sheet.



Brett Martin's Marlon CS Longlife profiled polycarbonate sheet was the material of choice for Manchester City's canopy roof.

Below the roof, solid polycarbonate with double sided co-extruded UV protection was used as a clear vertical glazing material to produce a visual separation between the stadium walls and the canopy, giving the effect of the canopy being suspended and floating. The polycarbonate creates a wind break and supplies weather protection to the spectators while still allowing air to circulate.



Marlon FSX Longlife solid polycarbonate sheet was the perfect product for Manchester City's canopy roof.

Profiled and multi-wall polycarbonate are used extensively in parts of the world where skin cancer is a problem. As strong, lightweight materials they are ideal for glazing a huge variety of canopies, from simple lean-to structures to much more complex pitched roofs. Cutting out 98 percent of harmful ultraviolet radiation, they allow people to enjoy the sun while minimizing the associated risks.

Multi-wall polycarbonate is also ideal for a range of leisure applications, including swimming pool covers, conservatories, outdoor shelters and walkways. This remarkable insulating material provides a range of insulation options and is a

highly efficient means of preventing heat loss, while tinted options also offer solar control and can reduce heat build-up in hot climates.

Polycarbonate is an outstandingly versatile material, being used in applications as diverse as international stadiums and jukeboxes. It helps people make the most of their leisure time in a huge variety of ways. ■

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