PALRAM

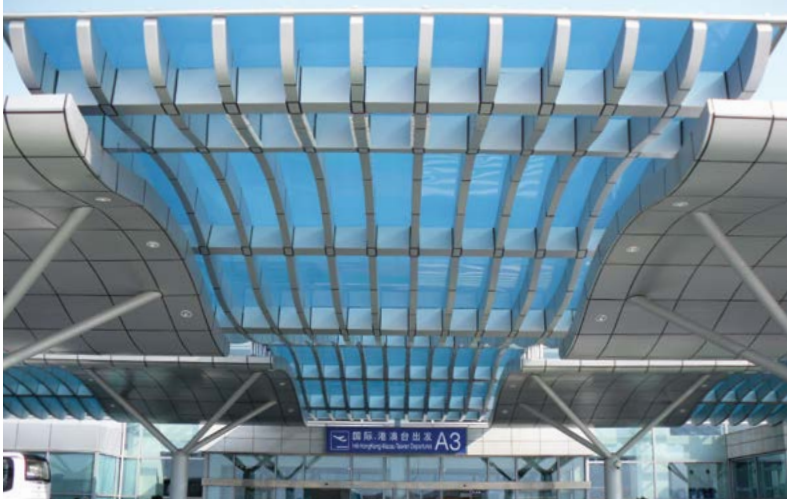
Turning Polycarbonate into Architecture

AN ARCHITECT'S GUIDE TO:

SPECIFYING POLYCARBONATE SHEETING

INTRODUCTION

Polycarbonate sheeting continues to be an increasingly popular alternative to glass in commercial and industrial projects. It provides similar transparency as glass does, but is lighter, a natural UV filter and offers a number of insulation and construction benefits. This paper will examine the key features and benefits of polycarbonate sheeting and the key considerations to be made when specifying for large commercial and industrial projects.



BENEFITS OF POLYCARBONATE SHEETING

Polycarbonate sheeting is an extremely robust, tough and versatile material with properties which offer many benefits.

The chemical composition of polycarbonate, along with the structure of the sheet, allows the product to be used to achieve excellent thermal insulation. A building which is well-insulated will provide year-round comfort while cooling and heating bills are considerably reduced as the inhabitants rely less on artificial heating and cooling, reducing greenhouse gas emissions. Polycarbonate's excellent light transmission characteristics also reduce the inhabitants' dependency on artificial lighting.

Polycarbonate sheeting's insulation properties are demonstrated by its R-values and U-values. R-values are used to measure resistance to heat flow, where a higher value indicates a more energy conserving material. U-value represents the effectiveness of a window in keeping out the heat and cold. Double glass layer has an R-value of 2, while the R-value of polycarbonate roofing materials ranges from 1.54 for a 6mm twin wall, right through to 3.2 for a 16mm five wall sheet.

Whilst a reliable indicator, the R-Value only partly explains the amount of heat felt under a translucent roof. Solar Heat Gain Coefficient (SHGC) is a measure of how much solar radiation passes through the window, as well as the heat absorbed and released inward. It is expressed as a number between 0 and 1 whereby the lower the number, the less the heat. By comparing the SHGC of polycarbonate sheeting products, it becomes clear they perform a similar function to opaque insulation, dispelling the misconception that translucent materials are less effective insulators.

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Additional factors to consider when choosing polycarbonate sheeting include:

Lightweight: Polycarbonate sheeting is very light when compared to glass. In fact it weighs less than half. This reduces transportation, installation and labor costs as the sheets are easy to handle.

Formable: It is extremely versatile and can be specified to match different structures, including flat and curved applications, allowing it to create custom-made designs. Polycarbonate sheets can be easily machined using standard metalworking or woodworking equipment without chipping, splitting or breaking.

Strength: Polycarbonate can withstand considerable mechanical forces - up to 250 times stronger than glass and up to 20 times stronger than tempered glass. This makes it suitable for areas where it may be exposed to impact, for example from hail, high wind loads and vandalism.

Service Life: The structural strength of polycarbonate translates to a life span of up to 30 years. Most polycarbonate sheeting is treated with UV protection on one side, or for further UV protection, on both sides. This gives the product an extended service life and resistance to damages caused by UV radiation, even in harsh climatic conditions.

Colors: Reputable suppliers will have a range of colors to choose from to suit different designs. The different colors and shade choices will influence heat and light transmission and shading co-efficiency (the shade provided to the interior when there is direct sunlight on the panel or window). Shading co-efficiency will also depend on the panel and the degree of reflectivity. For reduced glare and for even light dispersion, choose a diffuser matte finish.

Condensation Control: In a greenhouse environment, a sub-par polycarbonate product may cause condensation build-up, particularly as water evaporates. This could be problematic in some applications as condensation blocks light transmission. Reputable suppliers will offer products which are treated with condensation control, allowing up to 30% more light transmission and reduced plant disease relating to condensation dripping.

Applications

There is a range of polycarbonate sheeting products to suit industrial, commercial and residential projects. It is commonly used for structures which require natural light be let in through the roof or via cladding applications. This may include covered walkways, awnings and entrances, greenhouses, service stations, parking structures, swimming pool covers and more.

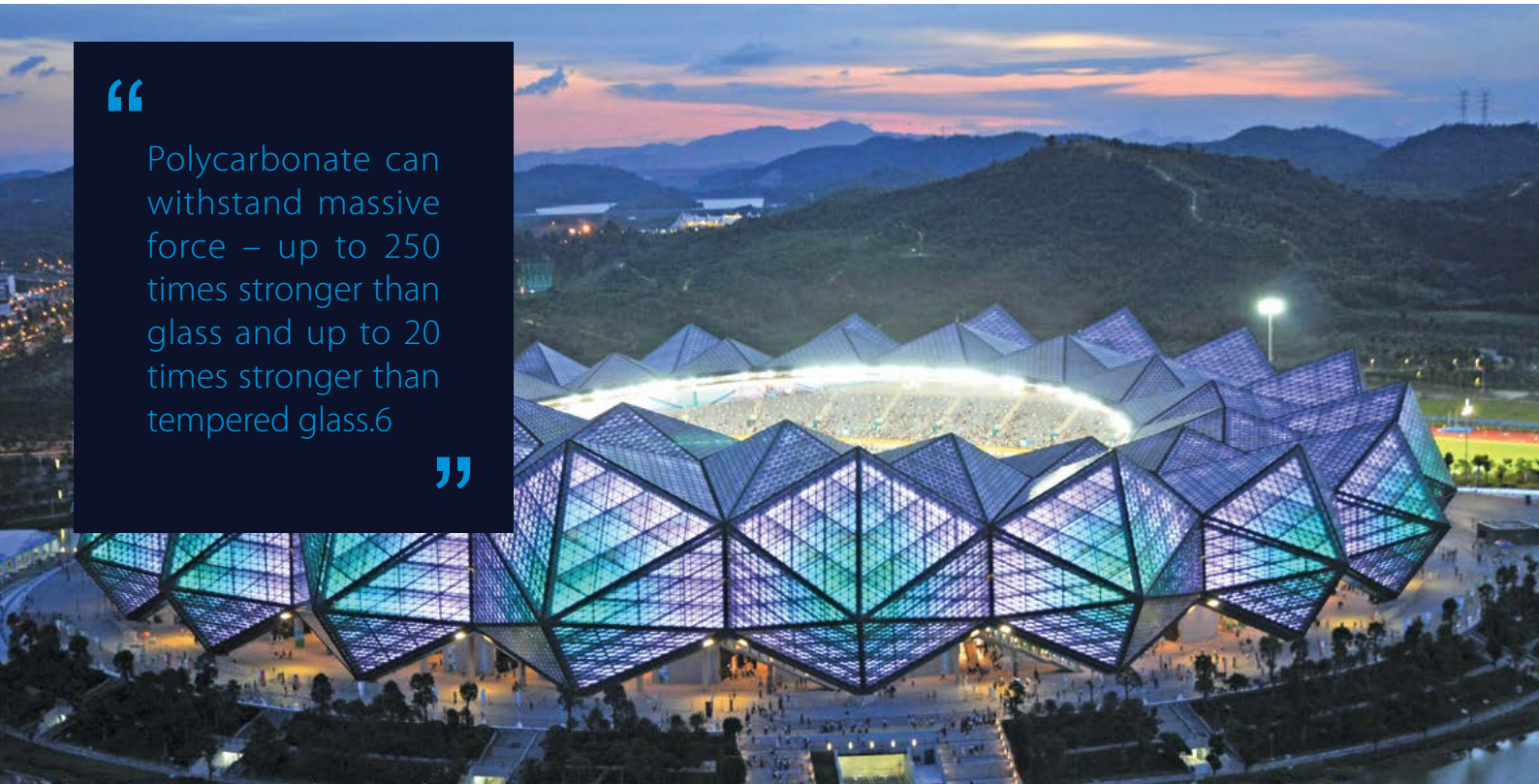
About Palram

Palram Industries is a global leader in the field of panel extrusions and panel systems manufacturing, with over 50 years' experience in designing and producing made-to-order Extruded Thermoplastic Sheets & Panel Systems. Our extensive product line is suitable for diverse markets and applications: construction and architectural solutions, large scale projects such as sports stadiums, shopping malls, airports & public transportation terminals, agricultural & farming structures.

Product offering includes architectural panel systems made from Polycarbonate, PVC & Acrylic.

Palram's Projects Support Center

Palram's Projects Support Center consists of a dedicated team of experienced professionals, leveraging Palram's expertise in panel extrusion. We offer design & engineering services and provide architects and building professionals with a comprehensive and holistic solution for their architectural and construction projects. Over the past two decades, the Palram Projects Support Team had a key role in the realization of world renowned sports venues, major transportation hubs and roadways, as well as large scale commercial, industrial and agricultural facilities. The Palram Projects Support team has implemented the company's broad product range into unique roofing, cladding and glazing solutions and applications. Through innovation in material technology, production capabilities, logistics and customer support, Palram Projects ensures top notch planning and successful execution of your projects.



> "Polycarbonate can withstand massive force – up to 250 times stronger than glass and up to 20 times stronger than tempered glass.6"

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