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Frequently Asked Question

Q: What is a daylighting system?

A: In structures, daylighting refers to the controlled admission of natural light into a building to illuminate the interior space. The best daylighting systems provide natural light without glare, delivering visual comfort and well-being.

Daylighting systems promote green building design and can be divided into two main categories: top lighting and side lighting. Skylights and translucent curtain walls are examples of daylighting systems.

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AmeriLux Newsletter

August 2015

Zoo Exhibit Entrance Features Polycarbonate Glazing

"Vertical Daylighting"

For the first time since the 1950's, komodo dragons are back at New York's Bronx Zoo. The exhibit opened earlier this summer and is the new home to three adolescent komodo dragons named Rose, Ivy, and Stubby.

The entrance of the exhibit features a beautiful translucent wall system engineered by Duo-Gard Industries Inc. in Canton, MI. The arched 28-ft-high by 20-ft-wide translucent



wall integrates LEXAN™ THERMOCLICK™ 40mm clear polycarbonate panels in Duo-Gard's proprietary aluminum framing profile. The light diffusing characteristics of the THERMOCLICK™ panel eliminate glare and hot spots in the exhibit, creating a misty, glowing appearance that draws visitor's attention.

The high thermal insulation properties of the 40mm LEXAN™ THERMOCLICK™ panel make it a perfect glazing choice for this type of application. The unique 5-wall X-structure polycarbonate sheet reduces heat loss from the interior of the exhibit, keeping the dragons comfortable at 95-100 °F, while maintaining a much cooler "visitor-friendly" temperature on the viewing side.

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Polycarbonate Term

Polycarbonate Translucent Wall

Used as a façade material or for interior cladding, polycarbonate translucent walls are an efficient and effective way to transmit natural light into a building.

Polycarbonate can be used as glazing on vertical, sloped, or curved walls.

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Also key in the design of the translucent wall was the tongue and groove feature of the LEXAN™ THERMOCLICK™ panel. The zoo's design team wanted a wall with clean lines that did not detract from the exhibit itself. The inter-connecting polycarbonate sheet eliminates the need for vertical profiles. From the visitor's side there are no visible fasteners, achieving the overall desired clean look.

Like its use in the Bronx Zoo dragon exhibit, the high-performance LEXAN™ THERMOCLICK™ polycarbonate panel offers architects and designers a lightweight, aesthetically-pleasing, glazing option with good thermal insulation, light transmission, and light diffusion characteristics. To learn more about how you can utilize this product in your next project, please [CLICK HERE](#).

Duo-Gard Industries Inc. is a leading innovator in high-performance translucent daylighting systems and architectural illumination, as well as custom canopies, shelters and outdoor structures. For additional information about Duo-Gard and/or this project, please visit <http://www.duo-gard.com>.

Photo by Anne Ruthmann Photography.

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Greenhouse Coverings: LT and Plant Growth

"Importance of High Light Transmission"

PAR Light Transmission is an acronym for photosynthetically active radiation and is the spectrum of light that is utilized by plants. Plant growth responds best to the blue and red bands of the visible PAR spectrum. This "visible portion" of the sun's total spectrum of energy is regarded by most horticulturalists as being critical for proper plant growth and development.



PAR light ranges from 400-700 nanometers and is simply a count of photons falling upon a surface in a given time. Photons are packets of energy which make up a stream of light. In horticulture, the number of photons absorbed by a plants leaves

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DIY Tip of the Month

Fall removal of leaves and debris from polycarbonate patio covers, canopies, and awnings is important to maintaining high light transmission and extending the life of the panels. Rinse panels with water and dry using a soft, non-abrasive cloth. If additional cleaning is needed, use a mild household detergent and a soft sponge.

Avoid cleaning the polycarbonate panels when dry. Sand and dust particles cling to the exterior of the panel and may scratch the surface. (Note: Minor surface scratches will not damage the panel, simply reduce optical clarity.)

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will determine the level of photosynthesis, thereby plant growth. Measuring PAR light can determine whether or not plants are receiving a sufficient amount of usable light. Plants cannot photosynthesize without the proper amount and type of light.

When it comes to light and growing plants in a greenhouse, growers are concerned with light intensity (brightness), light quality (color/whiteness), light duration (day length), and the ability for light to reach the plants. The amount of light transmittance coming into a greenhouse is one of the most important factors affecting plant growth and crop production.

When light transmission is deficient or drops below a minimum intensity, plants may fall below their compensation point. (A plants compensation point is the metabolic point at which the rates of photosynthesis and respiration are equal so that leaves do not gain or lose dry matter.) If this happens, photosynthesis slows down or ceases while respiration continues, greatly impacting plant growth, development, and yield.

Greenhouse covering materials have various light transmission values. Compared to glass, acrylic, and PE films, multiwall polycarbonate offers the greenhouse grower the ideal combination of high light transmission, thermal insulation, impact strength, and energy efficiency in a lightweight sheet.

Since light transmission plays such a significant part in greenhouse growing, understanding the performance characteristics of the different manufacturer's polycarbonate panels is very important.

Polycarbonate warranties address how much light transmission a panel will lose over a period of time. The higher the percentage, the more light transmission is lost. Loss of light transmission has a significant impact on the functionality of a polycarbonate panel, especially in plant growth applications.

The rule of thumb is that for every 1% of light transmission, there is a 0.75% - 1% loss of crop yield.

Most manufacturers of multiwall polycarbonate market a 6% - 10% loss of light transmission. LEXAN™ THERMOCLEAR™ 15 has been tested to be better than all other warranted multiwall products by 2 to 6 percentage points. To learn more, [CLICK HERE.](#)

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