

What is in a Warranty?

By their very nature, multiwall polycarbonate warranties can and will create confusion. Warranties speak to their duration, material valuation, and performance characteristics. However, they do not create a baseline comparison for how the product performs compared to other “like” products, they do not speak to the testing involved in supporting the warranty, and they certainly do not offer an insurance policy for other soft and hard costs that are realized in a warranty claim such as labor, freight, and downtime costs.

This document is designed to filter the confusion produced by warranties and create clarity around the specific performance characteristics that are discussed in warranties. As well, it will go so far as to show the economical impact of warranties in a comparative example.

Testing

In the spirit of providing a warranty, our expectation is to have testing that validates the performance characteristics that are noted in the warranty. As a point of reference, all of the LEXAN™ product warranties are supported with extensive testing.

- *Before introducing the LEXAN™ THERMOCLEAR™ 15 Year Warranty, SABIC (the manufacturer of the LEXAN™ brand) developed a significant advancement in technology and, with extensive research and development, tested its proprietary UV formulation for **over 5 years**.*
- *SABIC performed a weathering test on its LEXAN™ product for **over 2 years** before introducing the LEXAN™ THERMOCLEAR™ 15 brand.*
- *What does this translate into? An assurance that the product will perform to performance characteristics outlined in the warranty.*

Performance Characteristics

Light Transmission:

Polycarbonate warranties address how much light transmission the product will lose over a period of time.

- The higher the percentage, the more light transmission you will lose with your product.

The quality of light, as measured by the percentage loss of light transmission, has a significant impact on the functionality of your multiwall polycarbonate, especially in plant growth applications.

- An industry “Rule of Thumb” is that for every 1% loss of light transmission, there is a 0.75% - 1% loss of crop yield.
- LEXAN™ THERMOCLEAR™ 15 multiwall polycarbonate panels will not lose more than **4% light transmission** during the life of its warranty.
- Other manufacturers of multiwall polycarbonate market: **6% - 10% loss of light transmission**.

Based on light transmission, the LEXAN™ THERMOCLEAR™ 15 product has higher performance values than all other known warranted “like” multiwall products by 2 – 6 percentage points – at a minimum, 33% better than other “like” multiwall polycarbonate.

Performance Characteristics continued

Yellowing:

When used as a glazing material, polycarbonate sheets are exposed to the sun and are constantly attacked by the sun's ultra-violet (UV) rays.

- Yellowing is a visual sign of general degradation of the polycarbonate sheet due to UV exposure.
- In addition to poor aesthetics, yellowing provides insight that the integrity of the polycarbonate sheet is likely sacrificed – specifically, decreased impact resistance of the sheet (potential for impact damage) and loss of light transmission (impacting growth yield of a crop or product).

Polycarbonate warranties speak to a change in the yellowness over a period of time that the product is exposed to light (a Yellowing Index).

- Starting from the original color of the material, the warranty will specify how far from the original color the product will yellow over a period of time (referred to as a Delta YI).
- The higher the Delta YI, the more yellow the product is from the original color.

"The written warranty states that LEXAN™ THERMOCLEAR™ will not display a change in Yellowing Index (YI) of more than 5 Delta compared with the original value. Most other producers of multiwall polycarbonate warrant their sheets will not display a change in YI of more than 10 Delta."



Sample 1 - Delta YI=0
Reference Sample = Original Value



Sample 2 - Delta YI=5
LEXAN™ THERMOCLEAR™ 15



Sample 3 - Delta YI=10
Typical Multiwall Polycarbonate Sheet

With a Delta YI value of 5, the LEXAN™ THERMOCLEAR™ 15 brand will retain its high performance attributes longer than other known "like" multiwall polycarbonate.

Proration

This identifies how much value you will receive in the event of a warranty claim.

- For example, if you purchased \$100,000 of material and the proration is 50% after 8 years, you are eligible for 50% of the replacement value in year 9 – \$50,000 to cover your replacement material.
- The caution with this is the potential for increased costs (e.g. the value you receive when replacing the product may not have the same value when you originally purchased the product).

What Does a Warranty Cover?

In the event of having to replace product in a warranty claim, consideration needs to be given to other costs beyond the warranty's material replacement proration schedule. There is no provision in these warranties to cover:

- Labor costs associated with removing and replacing the material.
- Transportation costs associated with replacing the material.
- The costs of not being able to use the structure as the material is being removed and replaced.
- The disposal costs for removing the replaced material.

"What is in a Warranty?"

Comparative Example

The following table is designed to provide perspective on how "like" 8mm multiwall polycarbonate products truly are not "like" when reviewing the warranty. While the names are encrypted, these are actual products sold in the marketplace with the below information public knowledge.

	Product PS	Product PP	LEXAN™ TC15 Softlite
Warranty	10 Years	15 Years	20 Years *
Material Gauge (Thickness)	8mm	8mm	8mm
100% Material Reimbursement in the Event of a Warranty Claim	1st 3 years	1st 10 years	1st 15 years
Light Transmission (LT)	80%	77%	79%
Light Diffusion	95%	100%	100%
Loss of LT (Warrantied Loss of LT)	6%	6%	4%
Potential Light Transmission at the End of the Warranty	75%	72%	76%
Delta YI (Warrantied Yellowing)	Delta 15	Delta 10	Delta 5

The above information is based on known data as of June 2015
* AmeriLux International Extended Warranty

What does the above table translate to in potential growth (yield) loss for the grower? The following hypothetical examples are designed to show the financial impact of yield loss when comparing LEXAN™ THERMOCLEAR™ 15 Softlite to other "like" multiwall polycarbonate materials. Based on the rule of thumb for the loss of light transmission,

[Annual plant growth (in \$'s) utilizing multiwall polycarbonate] x [the difference in warranty years] x [the loss of light transmission percentage point difference at the end of the respective warranties] = financial impact

Example #1

Annual Plant Growth (Yield) (\$) Utilizing Product PS	\$ 1,000,000.00
Year Warranty Variance Product PS vs. Lexan TC 15 Softlite	10
Light Transmission Percentage Point Variance Product PS vs. Lexan TC 15 Softlite	1%
Total Percentage Point Variance Over the Warranty Variance of Product PS vs. Lexan TC 15 Softlite	10%
Growth (Yield) Loss (\$) Over the Warranty Variance of Product PS vs. Lexan TC 15 Softlite	\$ 100,000.00

Example #2

Annual Plant Growth (Yield) (\$) Utilizing Product PP	\$ 1,000,000.00
Year Warranty Variance Product PP vs. Lexan TC 15 Softlite	5
Light Transmission Percentage Point Variance Product PP vs. Lexan TC 15 Softlite	4%
Total Percentage Point Variance Over the Warranty Variance of Product PP vs. Lexan TC 15 Softlite	20%
Growth (Yield) Loss (\$) Over the Warranty Variance of Product PP vs. Lexan TC 15 Softlite	\$ 200,000.00

The above examples, in the context of the rule of thumb for loss of light transmission, show the significant loss a single percentage point can mean over the life of a warranty when compared to other "like" products.

Conclusion

As noted in the beginning, by their very nature, multiwall polycarbonate warranties can and will create confusion. By filtering thru the confusion and creating clarity, it is reasonable to conclude that all "like" multiwall polycarbonate is not created equal as displayed by the fact that all warranties are not created equal. Understanding this presents considerable cost savings opportunities for an end user when selecting a multiwall polycarbonate glazing structure.

If there are any questions about this document, please call Sundance Supply at 888-775-6176