CRANE Composites

Heat Build-Up Information | Kemlite® ETR Translucent Roof Panel

Background:
Composite translucent roofs have been in wide use since 1990, specific fleets have expressed concern about heat build-up inside of trailers made with these roofs. This has not been a widespread concern, but it typically arises in the summer with fleets that transport products that are sensitive to heat.

It was Crane Composites' goal to document the heat build-up effect in trailers with different roof materials. XTRA Lease cooperated in this testing, allowing CCI to test five trailers (each with a different roof panel material) at their facility in Phoenix, Arizona.

Testing:*
The tests were conducted over a four day period. Continuous temperature and relative humidity readings were obtained by using three data loggers (DL), each positioned 16′ from the nose of each trailer. The average daily temperature reached a maximum of 64º in the shade and 86º in the sun. The trailers were tested in the sun and were appropriately 6′ apart from one another with rear doors facing south. The roof specification on each trailer was as follows:

Product:	**Date of Manufacture:**
Kemlite ETR 1% Light Transmission, 0.075″ Thick	11/2007
Kemlite ETR 10% Light Transmission, 0.075″ Thick	11/2007
Kemlite ETR 30% Light Transmission, 0.075″ Thick	11/2007
Aluminum Roof, 0.040″ Thick	11/2007
Aged Aluminum Roof, 0.040″ Thick	02/1996

Results			
Roof Description	**Maximum Temperature Interior Roof Surface**	**Maximum Temperature Inside Trailer 2' from Ceiling**	**Maximum Temperature Inside Trailer 6' from Ceiling**
1% Light Transmission ETR Roof Panel	73.2º	71.1º	67.5º
10% Light Transmission ETR Roof Panel	76.7º	74.4º	71.8º
30% Light Transmission ETR Roof Panel	83.8º	80.2º	79.2º
Aluminum Roof	88.4º	74.6º	71.1º
Aged Aluminum Roof	99.5º	73.3º	70.0º

Summary:

1. The 1% ETR roof panel generated a lower interior temperature than an aluminum roof by 3º-4ºF (about 5%).
2. The 10% ETR roof panel generated an equal interior temperature as the aluminum roof.
3. Both the 1% and 10% ETR roof panels allow better visibility in the trailer compared to the aluminum roof.
4. Aluminum roofs generate the highest allowed surface temperature.

1% Light Transmission ETR Roof Panel

10% Light Transmission ETR Roof Panel

30% Light Transmission ETR Roof Panel

Aged Aluminum Roof

Aluminum Roof

www.cranecomposites.com | 1.800.435.0080 | 1.815.467.8666 (fax) | sales@cranecomposites.com

Crane Composites is the manufacturer of ArmorTuf, Kemlite and a variety of other fiberglass reinforced plastic (frp) composite panels. Inspired by the Kemlite tradition, Crane Composites has over 55 years of experience in Transportation Products and is a recognized industry leader in frp applications.

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