



## Blade™ Panels

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## Composite Panel Structure

At just 7.5mm thick, the Blade™ panel comprises a high density Polyethylene foam core (HDPE), faced on both sides with 0.5mm 80,000 psi yield, hard steel sheeting. The panels are finished with a 5 year guaranteed hot dipped galvanisation with polyester baked paint top layer.

Hot-dip galvanizing produces zinc carbonates when exposed to the environment, thus protecting the coating metal and minimising corrosion.

- Reduces standard trailer weight by 250kgs.
- Provides additional internal width.
- Exceptional impact resistance.
- High degree of rigidity (Essential for integral trailer strength and durability).
- Superior fixing surface for Load-Lok rails.
- Completely Recyclable.
- Simple to repair.
- Eliminates panel water ingress.
- Smooth high gloss finish (Ideal for Livery application).

**Strength:** Blade™ panels, due to their composite material construction, display exceptional strength qualities for both rigidity and acute impact resistance; comparable with GRP faced plywood.

**Weight:** Although not the lightest material available, Blade™ panels provide excellent weight savings (26.25%) in comparison to GRP faced plywood.

**Durability:** Under salt spray accelerated test conditions, it has been proven that Blade™ panels perform well in excess of uncoated Stainless Steel. The core does not de-laminate or deteriorate like plywood.

**Recyclability:** GRP faced plywood panels are not viably recyclable. Blade™ panels can be delaminated. The Steel facing is smelted whilst the HDPE is granulated.

**Ease of Repair:** GRP damage can be routed out and filled with standard bodywork filler. Blade™ panel damage is less likely due to higher impact resistance but moderate damage can be simply filled and re-finished.

**Paint and Livery Application:** Vinyl livery has significantly better adhesive properties with high gloss/machine finish panels such as Technolite™ and Blade™.



## Panel Types (To Scale)

Standard GRP Faced Soft Plywood



Omnia Polypropylene Honeycomb



Carbfont Polycarbonate Delta Core



Technolite™ Aluminium Honeycomb



Blade™ Steel Faced High Density Polyethylene Foam



## Panel Comparison Specification Sheet

	Standard GRP	Omnia	Carbofont	Technolite™	Blade™
<i>Appearance</i>					
<i>Material</i>	Plywood/GRP	Polypropylene (PP)	GRPR/PC	Aluminium	Polyethylene (HDPE)/Steel
<i>Construction</i>	Soft, plywood core, faced with glass reinforced plastic	Polypropylene honeycomb core faced with fibreglass reinforced polypropylene sheets	Glass Reinforced Polyester Resin skin with Polycarbonate delta core Gelcoat RAL 9010 finish	Aluminium honeycomb core faced with aluminium sheets	High density polyethylene (HDPE) foam core. Hot dipped galvanisation steel skin (80,000 yield hard steel). Polyester baked paint.
<i>Weight (kgs/m<sup>2</sup>)</i>	16	4.8	8.35	7.4	11.8
<i>Thickness (mm)</i>	21mm	30mm	20mm	20mm	7.5mm
<i>Surface Finish</i>	Smooth	Dimpled	Textured	Gloss smooth	High gloss smooth
<i>Skin Sheet Thickness (mm)</i>	1	0.7	1	1	0.5
<i>Skin Fixation Strength (/10)</i>	7	3	5	6	9
<i>Rigidity Scale (/10)</i>	8	3	7	9	6
<i>Acute Impact Resistance Grade (/10)</i>	8	7	6	5	9
<i>Environmental Effect</i>	Moisture ingress into plywood leading to eventual delamination and core deterioration	Rigidity is affected by variances in heat. Material also affected by UV light.	-	NIL	See TR044E-02 corrosion test.
<i>Damage Degradation</i>	Moisture ingress into plywood leading to eventual delamination and core deterioration	As above.	-	Subject to surface oxidation if paint surface broken.	Self-healing zinc skin. Subject to oxidation if galvanised surface is broken.
<i>Flammability</i>	Self fuelling active flame	Self fuelling active flame. Includes glass retardant	Self fuelling active flame. Includes glass retardant	melting point 660°C	Auto-extinguishes
<i>Recyclability</i>	Not recyclable	Granulation, provided surface is pre-treated. Post-purification and additives required.	Granulation, provided surface is pre-treated. Post-purification and additives required.	Melts to pure recyclable product. Low cost process.	Steel skin can be melted. Polyethylene core can be granulated. Post purification and additives required
<i>Absorbency</i>	Moisture content fluctuates between 8-12% at time of milling to 30%. Trailer can fluctuate in weight by +/- 240kgs	0.03%	-	NIL	<0.01%

## Vehicles With Blade™ Panel



## Conclusion

The Don-Bur Blade™ panels represent the next step in the continual evolution of trailers and rigid bodywork with the aim to:

1. Significantly reduce the impact on the environment.
2. Provide cost-effective solution.
3. Manufacture strong, durable componentry.

Its combination of inherent strength and resistance to damage exceed that of any other panel type in use.

It saves significant weight which, in turn, saves fuel...

...a combination which has never before been achieved.



# Blade™ Accelerated Corrosion Test

## Summary

Four Blade™ panels were sheared to size and suspended in the salt spray booth for 1000 hours (80 days) at ASTM B-117 specifications. The panels were hung from a hole drilled in the panel one inch inboard from the edge in the vertical position. The panels were inspected at 250 hour intervals for creep of the salt spray under the white coating. The panels were marked 1 through 4 with each side being further denoted by 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B. Panel 1 size was 15-½ inch by 20-7/8 inch. Panels 2, 3, 4, were each 13 inch by 15-½ inch.

It is not possible to calculate a real-time equivalent due to the complexities of the corrosion process; however, Stainless Steel subjected to the same conditions would expect to show oxidisation (rust) after just 100 hours. Under normal operating conditions, a trailer's Blade™ panels would be expected to retain their appearance for a minimum of 5 years (Guaranteed).

## Test Results

- 250 Hour Inspection: All panel sheared edges no change looks good. One-eighth inch creep bubbles around drilled hole holding panel in salt spray on sides 1A, 1B, 2B.
- 500 Hour Inspection: All panel sheared edges no change looks good. One-quarter inch creep bubbles around sides 1A, 1B, 2B. All other drilled holes have 1/8 inch creep bubbles.
- 750 Hour Inspection: Panel 3A has a 2 inch length of 1/8 inch creep bubbles at the lower right corner. This corner appears to have been dented upon delivery to lab at this area. Panel 1A has a 1/2 inch length of 1/8 inch creep bubbles at the lower right corner. All other panels no creep bubbles on the sheared edges. The drilled holes all have creep bubbles ranging from 1/2 inch from the hole to 1/16 inch.
- 1000 Hour Inspection: The drilled holes have creep under the coating from the hole 1/8 inch to 3/4 inch from the edge. Salt spray creep bubbles have appeared on all panels at the sheared areas to varying degrees. Only panel 4A has no creep bubbles at the sheared edge. Table 1 on the next page exhibits the total amount in inches of sheared edge, the amount in inches of creep, the depth of average creep under the white coating, and the length and depth of the worst creep edge at the end of test 1000 hour inspection.

## Creep Of Salt Spray Under While Coating At Sheared Edges At End Of Testing

Panel Number	Total length of sheared edge	Total length of sheared edge with salt spray creep	Average amount of salt spray creep of total sheared edge	Average depth of salt creep	Greatest penetration of salt spray creep depth and length
1A	72.75 inches	12 inches	16.6%	1/8 inch	1/4 inch deep by 2 inch long
1B	72.75 inches	9.5 inches	13%	1/8 inch	None greater than 1/8 inch deep
2A	57 inches	5 inches	9%	1/8 inch	None greater than 1/8 inch deep
2B	57 inches	1.5 inches	3%	3/16 inch	None greater than 1/8 inch deep
3A	57 inches	6 inches	11%	3/16 inch	5/8 inch deep by 1 inch long
3B	57 inches	2.5 inches	4%	1/8 inch	None greater than 1/8 inch deep
4A	57 inches	No creep	0%	no creep	no creep
4B	57 inches	10.5 inches	18%	1/16 inch	1/8 inch long by 2 inch long

### Test Conclusion

The drilled holes had salt spray creep from the edge of the hole anywhere from 1/8 inch to 3/4 inch. This is to be expected when drilling which has occurred in previous tests but is mentioned here as reference. Sheared edges did not exhibit any signs of creep until 750 hours in the salt spray. Then, panels 3A and 1A combined between the both of them had 2.5 inches of 1/8 inch deep creep while all other panels were okay. So even at 750 hours the sheared edges were doing well. At the 1000 hour end of test inspection, only panel 4A had no creep but the other panels for the most part only had 1/8 inch or less creep depth under the coating with smaller areas of 2 inch or less which went deeper. The total percentage of sheared edge with salt spray creep ranged from 0% for panel 4A to 18% for panel 4B with an average percentage of all panels of 9.3%. It was also observed that the side of the panel which is opposite the shearing knife appeared to have a greater amount of salt spray creep present. This is the side that is not rolled over by the shearing knife. Sheared edges still exhibit the best resistance to salt spray creep over sawing and even machining. For example, in 1000 hour salt spray tests the table on the next page illustrates this point.



## Edge Preparation Comparison For 1000 Hours In Salt Spray

Test Request	Type Of Edge Joint	Preparation Of Edge	Hours In Salt Spray	Time In Salt Spray When Creep First Appeared	Average Depth Of Creep From Edge At End Of 1000 Hours	Average Length Of Creep For Total Length Of Edge At 1000 Hours
TR044D-02	Ship Lap	Sewn	1000	125 Hours	$\frac{3}{8}$ Inch	100%
TR044F-02	Ship Lap	Machined Or Milled	1000	250 Hours	$\frac{3}{16}$ Inch	34%
TR044E-02	Regular Sheared Edge	Sheared	1000	750 Hours	$\frac{1}{8}$ Inch	9.3%

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## Thank You

If you have any questions about this document, or would like to discuss your operational requirements, please call the Don-Bur sales department on 01782 599 666



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Established in 1981, the Don-Bur Group has become internationally recognised for its innovative development of trailers and rigid vehicle bodies, designed to minimise operational costs and increase efficiency.

Don-Bur has committed to research and develop solutions with primary focus on aerodynamics and optimum utilisation of available cubic capacity.

Based in Stoke-on-Trent in the West Midlands, Don-Bur has a 500 strong flexi workforce and generates a group annual turnover of £50 million. Vertically integrated divisions include an 18 acre primary manufacturing site, curtains and load restraint division, graphics house and two after-sales service sites (repair, servicing, refurbishment and ATF Station).

The comprehensive structure provides a complete and fully accountable solution for clientele, catering for all commercial vehicle needs throughout their