



PRO-LITE Technical Information
Pro-Lite carbon disc wheel – Construction ...P1

The true disc wheel of the future is here today. Thousands of man-hours have gone into developing the finest disc wheel known to mankind. With one aim in mind we wanted to dispel the myths other brands create about their wheels and give the rider a product that will simply enhance performance. To do this we had to tackle the key problems of other disc wheels.

The problem is that to maximise power transfer you need to have a solid wheel in order to remove flex and power being absorbed by the wheel moving when a load is applied.

During our testing we took brands such as Zipp, HED, PRO and Corima and figured out why they make their wheels the way they do. It soon became obvious that the amount of hype that the cycle industry generates really does convince people that a secret ingredient here and long winded word there will really make you believe you can go faster.

Now if other manufacturers put half a much effort in really producing a true product that really does deliver performance as they do into hype marketing then we would be producing riders who can go so much faster.

In this comparison we will give credit to Zipp as the market leader in sales and try and make it clear on how a Pro-lite wheel will simply out perform a Zipp wheel.



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ZIPP :

The hub has no flange and is much weaker and will flex under load due to the fact it is simply glued to Nomex honeycomb. As there is no joint this can cause the hub to rip out as it is only held in place by gluing the outer cover to the hub and there is no core to enhance the drive system, it relies solely on the weak joint of the outer flange being glued to the disc.

The torque created by a rider fro starting or accelerating will twist the hub and it is most important to transfer that power without it being absorbed in flex.

In the Pro-Lite wheel we have designed a specific flange which is press fitted to the CNC machined hub to allow maximum power transfer. This is then bonded using specially developed syntactic foam. The foam is mixed with microspheres that are used to hold aircraft together.

Syntactic foams behave like homogenous solids and have been extensively developed by Lockheed Martin Astronautics in the USA. And have found their way into many kinds of construction where strength and weight are of paramount importance, including structural and military applications.

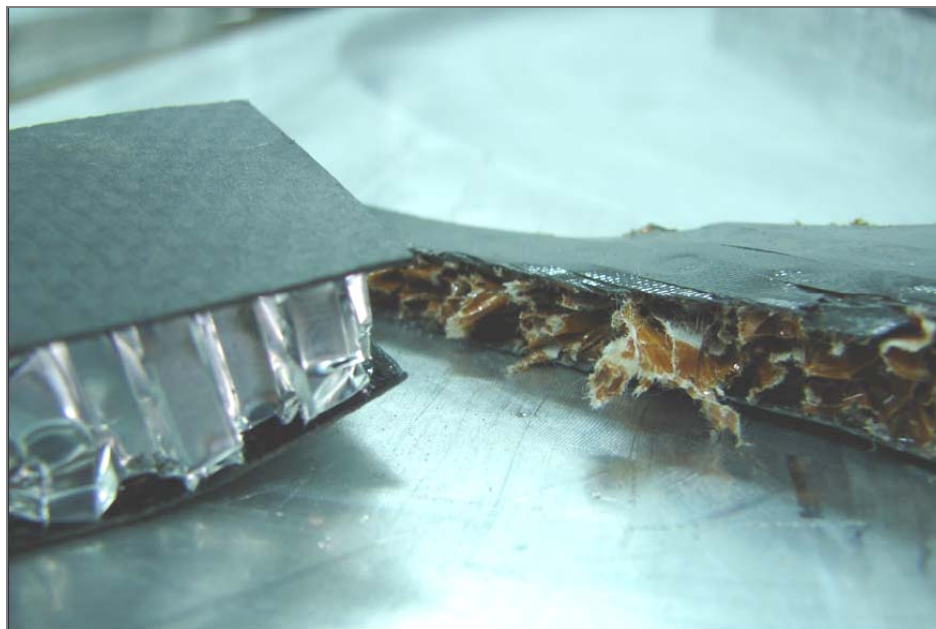


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Basically we are talking about a sandwich construction consisting of load bearing outer skins linked with the specifically developed Pro-Lite 7046 alloy honeycomb and made to incredibly efficient in transmitting power.

Unlike syntactic foams, honeycombs are orthotropic and the strength varies from axis to axis. The task faced by Pro-Lite was to develop a honeycomb far stronger than Nomex yet maintaining low weight and maximising power output.

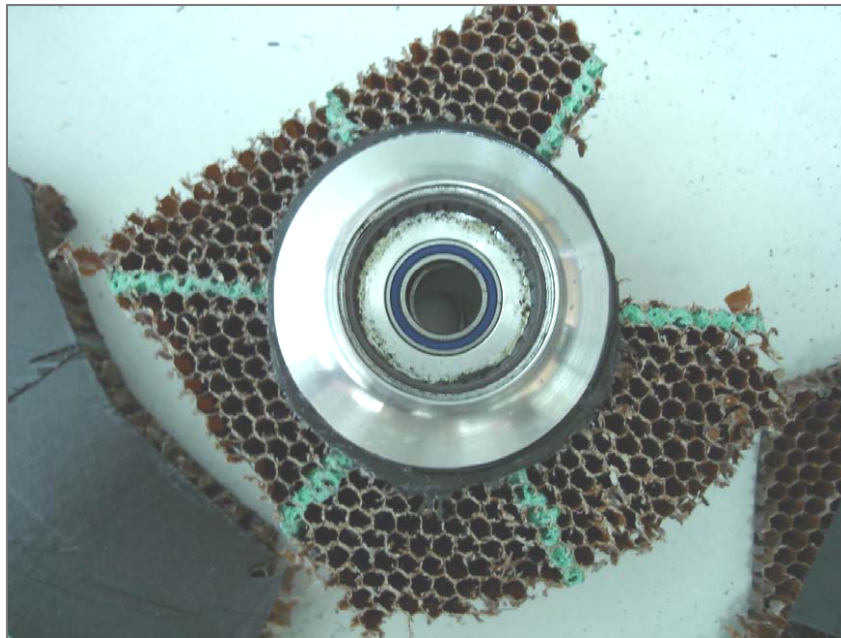
You can see from the picture below that simply by applying a 100 kg weight to a section cut from the wheel we can show the huge difference between PRO-LITE alloy and Nomex





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Both pieces were 20mm wide before applying the load and its obvious which one is stronger. Going back to the importance of power transfer as you can see from the Zipp wheel that the Nomex is simply laid between the carbon sheets and a small amount of resin is used to act like a spoke.



You will also note just how small the bearings are and in PRO-LITE we only use Japanese EZO angular contact bearings, which lower rolling resistance and do not flex under load.

They are virtually zero maintenance and will last a lifetime of abuse.

Another interesting “test” was to put the wheel on two allow blocks on the floor to support the outside of the wheel. We wanted to apply load to see how much it flexed. The Zipp wheel simply broke in two, where the Pro-Lite wheel allowed us to jump up and down on it and still show no sign of damage.

Just so you know we are not joking you can the video clip show this being done!