THE GEAR GUY

# Carbon clinchers under pressure

## All-carbon rims rule, but the R&D has to back up the finished product, says Warren Rossiter

We've seen reports of some recent US events outlawing carbon clinchers due to the fear of them failing under heavy braking. This seems like a knee-jerk reaction considering the development the best wheels have undergone. But it's understandable when so many less developed products have hit the market.

Less sophisticated 'open mould' tubular compatible wheels have been around for years (open mould designs are available to anyone for rebranding). On the whole these are 'relatively' safe, as tubular rims have no hooked bead that can warp under heating. However, carbon clinchers pose more design challenges.

Carbon composite constructions fail due to heat because the epoxy resin starts to deteriorate, a process called 'glass transition' (Tg). When this happens the outward pressure of a clincher tyre on the rim wall can cause it to deform and potentially fail. Not surprising when the heat generated braking on a mountain descent can reach 160°C!

For its clinchers Zipp sourced a heat resistant resin used in Formula 1 – which has much hotter temperatures to conquer. In fact Zipp has been at the forefront in testing and developing carbon clinchers. Its rims have to surpass its own protocols where temperatures exceed 232°C/450°F. When it started developing the rim technology Zipp couldn't find a rim on the market capable of coping with over 190°C, and the company was the first to overcome the heat issue. Enve, Xentis, Campagnolo and Corima are also among those today who test to temperatures in excess of the accepted limits. Zipp also commissioned a machine to test carbon-specific brake pads, a replica of which is used by industry leader SwissStop. This has led to the latest pads that enhance cooling by up to 30°F.

But what's needed is an industry standard to which all clincher rims have to comply. And if inferior products weren't undermining the carbon wheel market then increased sales would also bring prices down – benefiting us all. Zipp's technical director Josh Poertner told me that that's exactly what is now being created, since his appointment as chair of the Wheel Committee of the World Federation of Sporting Goods Industry's bicycle group. This helps the UCI develop better test protocols for racing, but is now also looking to instigate testing guidelines for what is a fairly new product.

Poertner explained: "Zipp/SRAM is working with other manufacturers to establish a global standard for carbon clincher safety and has even divulged its own testing standards to the rest of the industry [Corima has now done the same]. We have opened our standard to both the WFSGI and the CEN/ISO testing committees."

Josh says it's about making sure the industry ensures it produces safe, quality products, because in a worst-case scenario, 'If our entire classification of product is banned… we will all suffer mightily.' With over 30 companies involved – including Zipp, Campagnolo, Xentis, Enve and Corima – the brands we know and trust will continue to be just that.

**What's needed is an industry standard to which all clincher rims have to comply**

I've been running carbon clinchers for a couple of years and these have proven as good as aluminium rims in braking and wear and haven't suffered heat-related issues. So my advice, if you do want an all-carbon aero wheel: don't be tempted by offers from brands you've never heard of. Prices that seem too good to be true probably are.

Illustration Harry Haysom