

COMPIEGNE, France (VN) — Every year, pro teams lining up for the most brutal road race of the calendar, Paris-Roubaix, search for ways to decrease the likelihood of punctures without limiting performance. It turns out there are a lot of ways to skin a cat. Wheel and tire selection, tire pressure, and the use of sealant are all hotly debated amongst riders, mechanics and manufacturer staff. Some approaches to selecting Roubaix equipment are pure science, others are based on tradition and experience. The most successful teams appear to mix the two methods.

Wheels

The era of the carbon wheel at Paris-Roubaix has arrived. Fewer and fewer riders are relying on tradition when deciding on a set of wheels for the “Hell of the North.” Instead, teams visit the pavé secteurs to perform tests using accelerometer telemetry and power meters. And while the carbon wheels used for Roubaix are vertically stiffer than box-section aluminum rims, the use of larger tires and bicycle frames and forks tuned for the cobbles allows riders to cover the cobbled sections with less effort.

Most modern riders have raced on carbon wheels more than they have aluminum-rim wheels with three-crossed spokes. They are used to the way a carbon wheel reacts to a bump or irregularity in the road. Wrapping them in large tires makes for a predictable setup. To put it another way, racers are used to using their tires. That may sound strange, but they expect a wheel to be stiff and a tire to work hard to maintain traction.

Many riders, upon testing box-section wheels on cobbles, complain of a strange rebound felt at the handlebars. While a traditional wheel is more compliant, the way they bounce back after a hit is a strange feeling for some. The extra handlebar “noise” can be disconcerting.

And of course, the carbon wheels are lighter and more aerodynamic. Paris-Roubaix is over 250 kilometers, after all, and very often windy. It’s easy to underestimate the energy savings of aero wheels.

Tires

Paris-Roubaix is the one day of racing where tire sponsors seem willing to let teams use whatever they like. That isn’t the case for every manufacturer, but the number of Dugast and FMB tires is telling. Neither of these custom tire makers sponsors teams, so

someone is buying them, whether it's the team or the team's tire sponsor.

Mavic, for instance, doesn't currently produce a 27 or 28mm tubular. But they're very insistent that their sponsored teams use their tires. Usually they are Mavic marked, but clearly someone else's tire, either FMB blackwalls (which are stiffer than the tan cotton casing or white silk casing tires) or Challenge Parigi-Roubaix tires.

Tire width varied by five millimeters among teams lining up for Paris Roubaix on Sunday. The narrowest were Ag2r La Mondiale's prototype Michelin rear tires. They were a paltry (that's sarcasm) 24.7mm wide. Interestingly, the team rode larger 26mm tires on the front of their Kuota bikes. The biggest tire award goes to Europcar, who fitted tires close to 30mm on Colnago cyclocross bikes. Sebastian Turgot rode the setup to second, by a tire-width.

Pressure

The pressure a rider uses is determined by a lot of different factors. Rider size, tire size, tire casing rigidity, weather, rider skill and elapsed tire pressure drop for a given tire all play into what is best described as an artistic science experiment.

It is no surprise that larger riders often ride higher pressures, but Tom Boonen rides some of the lowest pressures in the peloton. With skill and often an unobscured view, Boonen can run extremely low pressures for a rider of his size. Others, struggling to stay on a wheel mid-pack end up hitting unforeseen holes and must put their pressure a bit higher to avoid compressing the tire to the rim bed.

"The larger the tire, the lower the pressure" is the old adage. And it's true for the most part. But many of the French riders on really large tires (close to 30mm) aren't running lower pressures than others on 25 or 27mm tires. But it's hard to compare between teams that use different tires because tire casing rigidity varies wildly.

Dominique Rollin spoke about tire differences.

"The Hutchinson tire we use at FDJ (actually a blackwall Dugast — ed.) has a stiffer carcass than the Vittoria tires I rode with Cervélo. So we run lower pressures," he said. "Five and five-point-three bar (72.5 and 78 psi) with the Hutchinson. For the Vittorias I rode more like six and six-and-a-half bar (87 and 94 psi)."

Team mechanics also study tire pressure drop over the course of a day. They'll pump tires to a given pressure at a certain time of day, jotting down the temperature and weather conditions (with humidity in mind). They'll then check the pressure at regular intervals to get an idea of how much and how quickly a tire loses air.

The first 100 kilometers of Paris Roubaix are covered on asphalt-paved roads, so it helps to have a bit more pressure at the beginning of the race. Luckily tires lose pressure over time. For teams, it's just a matter of figuring out how much they'll lose so they arrive at the cobbled sectors with ideal pressures.

Sealant

This may be the most debated subject when it comes to conquering the cobbles. Many teams have begun using sealant in recent years. Others contend that liquid latex doesn't help much on the cobbles, as most punctures are pinch flats. Of the 16 teams I spoke to, seven were using sealant and nine weren't. That's actually a surprisingly even split.

None of the teams were eager to talk about what product they were using in the tires. But I did spot Stan's liquid latex and Vittoria Pit Stop canisters in several trucks.

Team-by-team breakdown:

Omega Pharma-Quick Step

Wheels: Zipp 303 Firecrest

Tire: FMB cotton casing

Size: 27mm

Measured size: 28.2mm

Pressure front: 59.5 psi Boonen, 58 psi Chavanel (58 psi or less in the rain)

Pressure rear: 62.4 psi Boonen, 59.5 psi Chavanel

Sealant: no

Movistar

Wheels: Campagnolo Hyperon

Tire: Continental Competition

Size: 27mm

Measured size: 27.8mm

Pressure front: 85 psi

Pressure rear: 87 psi

Sealant: yes

Liquigas-Cannondale

Wheels: Mavic M40

Tire: no markings, looked like Veloflex

Size: ?

Measured size: 25.1mm

Pressure front: secret

Pressure rear: secret

Sealant: no

FDJ-BigMat

Wheels: Shimano C35

Tire: Hutchinson labeled Dugast

Size: 27 and 30mm

Measured size: 28.9mm (for the 27mm)

Pressure front: 72.5 psi (Rollin)

Pressure rear: 80 psi (Rollin)

Sealant: yes

Europcar

Wheels: Campagnolo Bora

Tire: Hutchinson (FMB or Dugast)

Size: no marking

Measured size: 29.2mm

Pressure front: 72.5 psi

Pressure rear: 80 psi

Sealant: no, but they did last year

Lotto-Belisol

Wheels: Campagnolo Record hubs with Ambrosio Nemesis rims

Tire: Continental Competition

Size: 27mm

Measured size: 27.2mm

Pressure front: 67-72 psi

Pressure rear: 70-80 psi

Sealant: no

Saxo Bank

Wheels: Zipp 303 Firecrest

Tire: Specialized (FMB Paris Roubaix cotton casing)

Size: 27mm

Measured size: 28.1mm

Pressure front: secret

Pressure rear: secret

Sealant: yes

Radioshack-Nissan

Wheels: Bontrager

Tire: FMB Paris Roubaix

Size: 27mm
Measured size: 28.3mm
Pressure front: 80 psi
Pressure rear: 87 psi
Sealant: no

Garmin-Barracuda

Wheels: Mavic M40
Tire: "French handmade provided by Mavic" FMB
Size: 27mm
Measured size: 28.5
Pressure front: 62.5 psi
Pressure rear: 72 psi
Sealant: no

GreenEdge

Wheels: Shimano C35/DA hub w/ Ambrosio "PRO" rim
Tire: Continental Competition
Size: 25 and 28mm
Measured size: 24.8 and 28.5mm
Pressure front: 76.9 psi
Pressure rear: 82.7 psi
Sealant: no; "We were told by Continental that it doesn't work. The sealant only hits the top of the tread, not the sides. It doesn't stick to the sidewall of the tires and that's where the tires pinch at Roubaix," said mechanic Craig Geater.

Sky

Wheels: Shimano C35
Tire: FMB Paris Roubaix
Size: 27mm
Measured size: 27.9mm
Pressure front: 67.4 psi
Pressure rear: 74.0 psi
Sealant: yes; "If it helps the riders get to the end of a sector, maybe it doesn't stop a puncture, but it does slow it down. If so, it's worth a shot," said Richard Lambert, one of Sky's mechanics.

Katusha

Wheels: Mavic M40/Cosmic Carbone Ultimate/aluminum rim mix
Tire: Mavic SSC-labeled Challenge Parigi-Roubaix
Size: 27mm
Measured size: 27.9mm
Pressure front: less than 87 psi
Pressure rear: less than 87 psi
Sealant: yes, liquid latex

Cofidis

Wheels: American Classic Carbon 38

Tire: Vittoria Corsa CX

Size: 25mm

Measured size: 25.1mm

Pressure front: 72.5 psi

Pressure rear: 80 psi

Sealant: no

Saur-Sojasun

Wheels: "Corima" Dura-Ace or Ultegra hubs on Ambrosio Nemesis rims

Tire: Panaracer-labeled Veloflex

Size: 27mm

Measured size: 26.0mm

Pressure front: 72 psi

Pressure rear: 80 psi

Sealant: no

Lampre-ISD

Wheels: Campagnolo Record hubs with Ambrosio rims

Tire: Vittoria Pavé

Size: 27mm

Measured size: 26.0mm

Pressure front: 80 psi

Pressure rear: 87 psi

Sealant: yes, put in on race morning (Vittoria Pit Stop spotted in the team truck)

Ag2r La Mondiale

Wheels: Reynolds 32

Tire: Michelin tubulars (prototype rear)

Size: no markings

Measured size: 26.0mm front/24.7mm rear

Pressure front: 65 psi

Pressure rear: 71 psi

Sealant: yes

Read more at http://velonews.competitor.com/2012/04/bikes-and-tech/what-tires-wheels-and-pressures-were-roubaix-riders-running_212925#8qpV5eV1F60iCBYw.99