

Wide High-Performance Clincher Tires

by Jan Heine and Mark Vande Kamp

Since the early days of pneumatic tires, cyclists have tried to find the optimal width for tires. In the 1920s, narrow tires became fashionable among racers as roads improved. Contrasting this, cyclotourists, influenced by *Vélocio*,¹ believed that their wide, supple tires were superior. 55 mm wide “Ballon” and 42 mm wide “Demi-Ballon” tires remained popular among French cyclotourists, until the cyclo-touring movement lost steam in the 1950s. Then riders began to follow the lead of racers toward narrower tires.

The trend toward narrower tires continued through the 1980s, when many riders used extremely narrow 18 mm clincher tires. However, even racers soon realized that super-narrow tires required very high pressures that resulted in poor comfort and mediocre performance. Today, most racers use 23 mm tires on the road. Some track racers, who ride under more easily controlled conditions and thus are able to evaluate the performance of equipment, now use 25 mm tires.²

Wider Tires Are Faster

In theory, wider tires offer better performance. Their contact patch is wider and shorter, thus requiring less tire deformation as the wheel rotates. However, the casings of wider tires endure greater stresses, and a wider tire requires a sturdier, less supple casing. Such a casing requires more energy to deform, and the net result often is a tire that is slower.

An alternative to sturdier casings is running the wider tires at lower pressures. This solution has been adopted by some track riders, who run their 25 mm tires at 10 bar (150 psi) instead of the 14 bar (200 psi) used for narrower track tires. Our real-road tests have confirmed that very high pressures

offer no significant performance benefits.³ However, harder tires feel faster, probably because they transmit a higher frequency of vibrations, which riders associate with higher speeds.⁴ This appears to be the reason why performance riders have gravitated toward narrower tires time and again over the history of the bicycle.

Other Benefits

Beyond performance, wider tires allow and even encourage cyclists to ride on more scenic backroads with less traffic. They also provide better cornering adhesion, because they put more rubber on the road. (Racing cars also use wide tires to improve cornering adhesion.) On bumpy roads, the lower pressures of wider tires improve cornering adhesion further by preventing the wheel from losing contact with the road surface.

Tires Are Getting Wider

With renewed interest in wide high-performance tires, several bicycle companies now are offering wider versions of their top-of-the-line tires. In this test, we evaluate high-performance tires that are wider than “standard” racing tires (23 mm). The tested tires are between 24 mm and 42 mm wide. All tires in this test have a folding Kevlar bead. Here are the results of our real-road tests:

Vittoria

Vittoria has been one of the leading brands of hand-made bicycle tires. Their classic “CX” and “CG” tubulars were the most popular racing tires of the 1980s and 1990s. In addition to tubular tires, Vittoria offers similarly constructed high-performance clincher tires. Their top-of-the-line model is available in a 25 mm width, with black tread and black sidewalls.

Vittoria Open Corsa Evo CX

Nominal size: 622 x 25 mm (700C)
 Width (on 20 mm Mavic MA-2 rim): 24.5 mm
 Weight: Sample 1: 232 g, Sample 2: 244 g
 Thickness (casing + tread): 2.2 mm
 Max. pressure rating: 9 bar (130 psi)
 Test pressure: 6.5 bar (95 psi)
 Test distance: 1300 km (8 miles)
 Test bike: 1973 Alex Singer Randonneur, 2007
 Crompton Custom Randonneur
 Price: \$ 65
 Country of manufacture: Thailand
 Availability: Bicycle shops, www.vittoria.com

We initially reported on the 25 mm wide Vittoria “Open CX” tires in *Bicycle Quarterly* Vol. 5, No. 3 (p. 22). We liked their supple casing and excellent cornering adhesion. In our rolldown tests, the tires were among the fastest we have tested. The tires were easy to mount.

The Vittoria “Open CX” suffers from below average durability. I switched front and rear tires after 800 km (500 miles). After 1300 km (820 miles), both tires have lost only 0.2 mm of tread, but feel very thin. Numerous cuts indicate that they should be replaced soon. During the test, I had three punctures. In two cases, a sharp object punctured the tire and tube, but did not get stuck, suggesting that the tires are easier to puncture than most. (JH)

Challenge

Challenge is the successor to Clement, the Italian maker of high-end tubular tires. For many years, Clement’s “Criterium Seta” with a silk casing was considered the best road racing tire. Clement’s wider tubular tires, the “Paris-Roubaix” and the “Campionato del Mondo”, offered a comfort and performance that rarely have been equaled. Like the last Clement tires, Challenge tires are made in Thailand. Challenge makes many of the tires used in the professional peloton, and they also make high-end tubular tires

for two of the leading German tire manufacturers.

In our first test of tire performance, the Challenge-made Deda Tre “Giro d’Italia” clinchers were the fastest of all tires we tested. A set of 1990s Clement “Campionato del Mondo” tubular tires also were among the top performers.

Recently, René Herse Bicycles, Vintage Bicycle Press and Challenge have teamed up to make wider hand-made clincher tires available. We also inquired into re-introducing the super-fast Deda “Giro d’Italia”, and found that it had been available all along under a different name as the Challenge “Triathlon”.

Challenge Parigi-Roubaix

Nominal size: 622 x 27 mm (700C)
 Width (on 20 mm Mavic MA-2 rim): 27.5 mm
 Weight: Sample 1: 279 g
 Thickness (casing + tread): 2.2 mm
 Max. pressure rating: unknown
 Test pressure: 5.9 bar (85 psi)
 Test distance: 1600 km (1000 miles)
 Test bike: 1973 Alex Singer Randonneur
 Price: \$ 80
 Country of manufacture: Thailand
 Availability: www.challengetechnology.it, Vintage Bicycle Press

The new hand-made Challenge “Parigi-Roubaix” is 27 mm wide, significantly wider than other hand-made clinchers available today. The tested tire was a prototype with black sidewalls. Production tires should be available this summer with tan sidewalls. The tread is a classic “fine file” as used on Clement’s tubular tires in the past. The prototype mounted easily on the Mavic MA-2 rims.

I have ridden many different tires, but I rarely have experienced tires that absorbed small bumps as well. Even when compared to the 30 mm wide Grand Bois “Cyprès” tires (see below), the Challenge “Parigi-Roubaix” offers a noticeable improvement in shock absorption on small bumps. Pavement joints simply disappear, rather than being transmitted to the handlebars. The wider Grand Bois still has the

edge on larger bumps and very rough pavement, where the added air volume provides more “suspension travel.”

The Challenge “Parigi-Roubaix” offers excellent cornering adhesion. The overall feel of this tire matches that of a wide high-quality tubular tire. I had no flats during my test of this tire. After 1600 km (1000 miles) on the front wheel, the tread began to look slightly worn.

We have not yet been able to test the performance of this tire in a roll-down test. Compared to the Challenge “Triathlon” (see below), the slightly coarser casing (270 tpi vs. 300 tpi)⁵ may reduce its performance slightly, yet its wider width may improve its performance. (JH)

Challenge Triathlon

Nominal size: 622 x 23 mm (700C)
 Width (on 20 mm Mavic MA-2 rims): 24 mm
 Weight: Sample 1: 219 g
 Thickness (casing + tread): 2.2 mm
 Max. pressure rating: 9 bar (130 psi)
 Test pressure: 5.8 bar (85 psi)
 Test distance (Deda version): 2000 km (1250 miles)
 Test bike: 1973 Alex Singer Randonneur
 Price: \$ 60
 Country of manufacture: Thailand
 Availability: www.challengetechnology.it, Vintage Bicycle Press

When sold as the Deda Tre “Giro d’Italia,” this tire was the fastest tire in Bicycle Quarterly’s real-road tire tests. In our subsequent full test of this tire (Vol. 5, No. 1, p. 40), I used these tires for 2000 km (1200 miles) without a flat, and set several personal best times during long-distance events. In addition to their high performance, these tires offered excellent comfort, road feel and cornering adhesion.

The downsides to these tires were their narrow width, their relatively quick wear (2000 km saw the tread reduced to a paper-thin, bald layer) (overall thickness of casing and tread 1.6 mm), and quality control issues that resulted in the tread separating from the casing on one of the two test tires. Furthermore, the tires were hard to mount on Mavic MA-2 rims.



Vittoria “Open CX Corsa” 622 x 25mm



Challenge “Triathlon” 622 x 24 mm



Challenge “Parigi-Roubaix” 622x27mm



Grand Bois “Cerf” 622 x 28 mm



Grand Bois “Cyprès” 622 x 30 mm



Grand Bois “Ourson” 584 x 35 mm



Grand Bois “Hetre” 524 x 42 mm

Test: Wide High-Performance Clinchers

According to Challenge, their “Triathlon” model uses the same casing and a very similar tread as the no-longer-available Deda Tre “Giro d’Italia”. Challenge claims to have solved the tread separation issue with better quality control. Comparing the Challenge “Triathlon” to the old Deda Tre tires, the casing is exactly the same size, and the materials appear to be the same, so it does appear that these tires are functionally the same. On the road, they feel the same, too. (JH)

Grand Bois

Grand Bois is the brand of Ikuo Tsuchiya, of I’s Bicycle in Kyoto, Japan. Unable to find suitable tires for his Grand Bois cyclotouring bicycles, he worked with Panaracer to produce tires that combine classic appearance with outstanding performance.

After their first model (650B x 32 mm “white label”) offered only mediocre performance in Bicycle Quarterly’s real-road tire tests,⁵ the manufacturer re-designed the tires to improve their performance. The “white label” model was replaced by the “green label”, and additional models were added to the line for cyclists requiring or preferring different sizes, both in 650B and 700C.

Cyprès 700C [“Cypress”]

Nominal size: 622 x 30 mm (700C)
Width (on 20 mm Mavic MA-2 rims): 31 mm
Weight: Sample 1: 290 g; Sample 2: 306 g
Thickness (casing + tread): 2.9 mm
Max. pressure rating: 6.7 bar (95 psi)
Test pressure: 5.5 (80 psi)
Test distance: 10,000 km (6200 miles)
Test bike: Ca. 1973 Alex Singer Randonneur
Price: \$ 55 (\$ 50 for 4 or more)
Country of manufacture: Japan
Availability: Bicycle shops, Vintage Bicycle Press

The “Cyprès” has become my mainstay for wide high-performance tires. Their width of 30 mm makes them wide enough to provide an optimum of comfort and speed on most paved roads, and they can be used on unpaved roads as well. Bicycles to fit these tires can be made without

compromising geometries, as would be necessary in many frame sizes for wider 622 mm (700C) tires.

With their black “fine file” tread and their tan sidewalls, as well as their subtle logo, these tires have a classic, understated appearance. On the road, the Grand Bois “Cyprès” offer great shock absorption, and they carry their speed well over rough roads. Short of hand-made tires, the Grand Bois are among the fastest tires available today. They offer excellent cornering adhesion.

Their durability is excellent for their performance, but slightly inferior to that of sturdier tires. The tread does wear out after about 3000-4000 km (2000-2500 miles) on routes including rough roads. Furthermore, these tires are not as puncture-proof as some more utilitarian tires. I have averaged about one flat per 2000 km (1200 miles).

For a while, Panaracer decreased the length of their bead by 2 mm to ensure that tires could not blow off some modern, undersize rims. This made the tires very hard to mount on most rims. For recent production runs, the bead has been returned to standard length. (JH, MVK)

Cerf 700C (2 sizes) [“Deer”]

Nominal size: 622 x 28/26 mm (700C)
Width (on 20mm Mavic MA-2 rims): 29mm/25mm
Weight 28 mm: Sample 1: 248 g; Sample 2: 259 g
Weight 26 mm: Sample 1: 222 g; Sample 2: 225 g
Thickness (casing + tread): 2.9 mm
Max. pressure rating: 7.4 bar (105 psi)
Test pressure: 5.8 (85 psi)
Test distance (28 mm): 400 km (250 miles)
Test bike: Ca. 1973 Alex Singer Randonneur
Price: \$ 55 (\$ 50 for 4 or more)
Country of manufacture: Japan
Availability: Bicycle shops, Vintage Bicycle Press

After the success of the 30 mm Grand Bois tires, numerous riders asked for narrower tires that fit more bicycles. For example, a typical bicycle designed for “standard-reach” dual pivot brakes, such as a Rivendell Rambouillet, will not fit tires wider than 28 mm with fenders and adequate clearance

between tires and fenders. The Grand Bois “Cerf” tires are available in a “green label” 28 mm version and a “blue label” 26 mm version.

In appearance and performance, these tires are very similar to the wider “Cyprès”. The tread has small dots in the center, rather than longitudinal lines, and the logos are square rather than oval.

Shock absorption suffers a little, as these narrower tires have a smaller air volume and require higher pressures. It still is much better than that of most modern tires. Our real-road tests show that the performance of the 28 mm “Cerf” is similar to that of the very fast 30 mm “Cyprès”. We have not yet tested the performance of the 26 mm version. (JH)

Cyprès 650B [“Cypress”]

Nominal size: 584 x 32 mm (650B)
Width (on 20 mm Super Champion M-58 rims): 31 mm
Weight: Sample 1: 285 g; Sample 2: 292 g
Thickness (casing + tread): 3.0 mm
Max. pressure rating: 5.2 bar (75 psi)
Test pressure: 4.8 (70 psi)
Test distance: 1000 km (620 miles)
Test bike: 1985 Alex Singer Camping, 2007 Pereira Randonneuse
Price: \$ 55 (\$ 50 for 4 or more)
Country of manufacture: Japan
Availability: Bicycle shops, Vintage Bicycle Press

The appearance and performance of the “Cyprès 650B” are almost indistinguishable from the 700C version. It is a great size for smaller frames, where 700C tires can require a compromised geometry and/or result in toe overlap. (JH)

Ourson 650B [“Little Bear”]

Nominal size: 584 x 35 mm (650B)
Width (on 23 mm Velocity Synergy rims): 36 mm
Weight: Sample 1: 356 g, Sample 2: 360 g
Thickness (casing + tread): 4.3 mm
Max. pressure rating: ?*
Test pressure: 3.5 (50 psi)
Test distance: 350 km (220 miles)
Test bike: 2007 Goodrich Randonneuse
Price: \$ 55 (\$ 50 for 4 or more)
Country of manufacture: Japan
Availability: Bicycle shops, Vintage Bicycle Press

* Because these tires use the mold of the Panaracer Col de la Vie tires, they carry the Col de la Vie’s pressure rating molded into the tires’ sidewall. With the same casing as the “Ourson”, the wider Grand Bois “Hetre” is rated to 5.2 bar (75 psi).

When 650B bicycles became popular in North America, the best all-round tire was the Mitsuboshi "Trimline" 584 x 38 mm (650B) tire. Unfortunately, Mitsuboshi stopped making bicycle tires, and the "Trimline" is not available any longer. Bikes designed for this tire often do not fit the 42 mm wide Grand Bois "Hetre" tires, while the 31 mm wide "Cyprés" is too narrow. To close this gap, Grand Bois introduced the "Ourson". To bring this tire to market quickly, without the investment for a new mold, Grand Bois decided to use the molds for the Panaracer "Col de la Vie" 584 x 38 mm (650B) tires. As a result, the Grand Bois "Ourson" has the same "micro-knob" tread pattern as the "Col de la Vie", but it uses the more supple Grand Bois casing.

In comparison with the Mitsuboshi "Trimline", the "Ourson" feels more sluggish and less lively. Its directional stability is affected by the micro-knobs, making the bike wander slightly when riding in a straight line. The knobs squirm under hard cornering. We have not yet been able to test the roll-down performance of this tire, but the thicker tread and the knobs seem to increase the tires' resistance – at least both Jan and Mark had the impression that Mark had a harder time keeping up when riding the "Oursons" than he did with Mitsuboshi "Trimlines". (MVK)

Hetre 650B ["Beech"]

Nominal size: 584 x 42 mm (650B)
 Width (on 25 mm Mavic Criterium rims): 42 mm
 Weight: Sample 1: 392 g; Sample 2: 426 g
 Thickness (casing + tread): 3.8 mm
 Max. pressure rating: 5.2 bar (75 psi)
 Test pressure: 3.8 (55 psi)
 Test distance: 500 km (320 miles)
 Test bike: 1952 Jo Routens, 2006 Kogswell P/R prototype
 Price: \$ 60 (\$ 55 for 4 or more)
 Country of manufacture: Japan
 Availability: Bicycle shops, Vintage Bicycle Press

The Grand Bois "Hetre" is a replica of a classic lightweight "650B Demi-Ballon" tire. At a full 42 mm wide, these

tires are very large. The tread consists of longitudinal lines. The version tested used a red tread, but future versions will have a black tread.

The shock absorption of these tires is far superior to any other I have ridden. Expansion joints or rough roads no longer upset the bike, and the bike carries its speed much better over rough roads. Gaps in the pavement and even streetcar tracks no longer pose a serious threat, allowing the rider to concentrate on traffic or simply to enjoy the ride. Off-pavement, these tires provide a generous margin of safety even on bumpy and rocky roads. The bike feels fast with these tires, and this is confirmed in our real-road performance tests. Like the narrower Grand Bois tires, the Hetres are among the fastest tires available today, with the exception of the extremely fast hand-made tires. The Hetres offer excellent cornering grip, and the improved shock absorption is a great benefit in bumpy corners. On wet roads, the red tread cornered as well as any tire I have ridden.⁶

The Hetre tires confirm that wider tires can be as fast or faster than narrower tires. Despite having 1 mm more tread than the narrower Grand Bois tires and a coarser tread pattern, they roll roughly as fast as the other Grand Bois tires. Once the ribs in the tread are worn down a bit and the tread is thinner, I expect these tires to be faster than most. (JH)

Michelin

Michelin used to offer their top-of-the-line Pro2 Race tires in a 25 mm wide version. However, due to production problems during the introduction of their new Pro3 Race tires, the 25 mm wide version is not yet available.

Conclusion

In the past, cyclists had the choice between narrow high-performance tires and wide touring tires. Neither

offered an optimum of performance, comfort and safety. In recent years, wider high-performance tires have become available that combine excellent performance with superior comfort.

If your bicycle can fit them, the **Grand Bois "Hetre" 584 x 42 mm (650B)** tires are hard to beat. They offer excellent performance and comfort with few drawbacks. Designing a bike that accepts these tires with fenders is not easy (see p. 60), but the smaller 650B wheel size reduces the compromises needed to fit wide tires and fenders into a balanced frame.

The **Grand Bois "Ourson" 584 x 35 mm (650B)** tires are a stopgap measure at best. Their performance and handling is limited by the "micro-knob" tread design. While the Ourson's casing is more supple than that of the otherwise similar Panaracer "Col de la Vie", we do not feel that it warrants the extra cost. Cyclists still are waiting for an excellent 584 x 38 mm (650B) tire to replace the Mitsuboshi Trimline.

The **Grand Bois "Cyprés"** in both 650B and 700C sizes offers excellent performance in a moderate width of about 31 mm. For cyclists not ready to take the plunge to a full "Demi-Ballon," these tires are an excellent choice for riding on pavement with only an occasional foray on unpaved roads. The 28 mm wide **Grand Bois "Cerf"** tires offer most of the same performance in a narrower width. In the same size range, the 27 mm wide **Challenge Parigi-Roubaix** are real hand-made tires. They offer unsurpassed shock absorption on all but the roughest roads. From our limited experience, the puncture resistance of Challenge tires appears to be excellent.

Challenge, Grand Bois and Vittoria all offer 24-25 mm wide high-performance tires. The **Grand Bois "Cerf blue label"** is an excellent all-round tire, that lasts longer than the hand-

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made tires, but it does not match their ride quality. Both the **Vittoria Open Corsa Evo CX** and the **Challenge Triathlon** are excellent tires. The Challenge appears to offer better puncture protection and a traditional appearance in addition to a slightly lower price. It is our preferred tire in this width.

Overall, the choices in wide high-performance tires have improved tremendously, providing cyclists with numerous choices. Obvious gaps in the current offerings include a really good 584 x 38 mm (650B) tire, as well as a hand-made wide 650B tire. There may also be a need for a 30-32 mm wide, hand-made 700C tire. If the current wider tires sell well, it is likely that these tires will become available.

Disclaimer: Vintage Bicycle Press imports Grand Bois tires and sells Challenge tires.

TUFO Tubular Clinchers: An Alternative?

Model tested: C Elite Ride 25
Width: 25.5 mm
Weight: Sample 1: 352 g, Sample 2: 353 g
Max. pressure rating: 10 bar (145 psi)
Test pressure: 6.2 bar (90 psi)
Test distance: 170 km (110 miles)
Test bike: 1973 Alex Singer Randonneur
Price: \$ 96
Country of manufacture: unknown
Availability: www.tufonorthamerica.com

Tubular tires offer better shock absorption and better road feel than similar clinchers, because their cross-section is round, rather than U-shaped. However, gluing them to the rim is messy, and the rider needs to carry spare tires, rather than spare tubes and/or patch kits.


Tufo offers "tubular clinchers" that promise the ride quality of tubular tires without the cumbersome gluing. They incorporate a rubber strip that grips a clincher rim.

Mounting the tires was difficult, as they need to be seated correctly.

It took me 15 minutes and several inflations until the tire was seated correctly, but practice might reduce this time. The tires measure 25.5 mm wide. On the road, they did offer some of the feel of a tubular tire, but overall, the ride quality was disappointing. The tires felt harsher than hand-made clinchers of similar width, and their shock absorption was inferior. Cornering adhesion was very good.

I cannot see the appeal of Tufo's tubular clinchers. They are heavier than high-end clinchers and do not provide a better ride. They necessitate carrying a spare tire, and they are expensive. I prefer high-performance clinchers, which provide a better ride and lighter weight, without the need to carry a spare tire. (JH)

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Superlight tubes

Inner tubes appear to have a negligible impact on tire performance,⁷ but lightweight tubes can provide significant weight savings. We tested two brands of superlight butyl tubes, plus our standard Michelin 700C and Schwalbe 650B tubes.

Vittoria Evo55

Weight: 58 g
Size: 622 x 19-23 mm (700C)
Price: approx. \$ 10
Country of manufacture: Thailand
Availability: www.vittoria.com

With 25 mm tires, the Vittoria tubes worked fine, even though they are rated only to 23 mm. The tubes save about 37 g compared to standard tubes, which is significant. (JH)

Maxxis Flyweight 26"

Weight: 96 g
Size: 26" x 1.90-2.125"
Price: \$ 12
Country of manufacture: Taiwan
Availability: www.maxxis.com

I used the Maxxis tubes in 584 x 38 mm (650B) tires. They were easy to install. With these tubes, I did not suffer more flats than usual. Their only disadvantage was a quicker loss of air. I had to inflate my tires weekly. The weight savings over a standard Schwalbe 650B tube (141 g) of 45 g are significant. I continue to use these tubes in everyday use. (MVK)

Maxxis Flyweight Road

Weight: 53 g
Size: 622 x 18-25 mm (700C)
Price: \$ 9
Country of manufacture: Taiwan
Availability: www.maxxis.com

Even though these tubes are rated for 25 mm tires, this appears to stretch the rubber too thin. When I used them with 24.5 mm wide Vittoria "Open Corsa CX" tires (see p. 54), one tube ruptured while the bike was parked. They may be fine for narrower tires, but their weight advantage compared to standard tubes is not worth the risk of failures. (JH)

Michelin Aircomp A1 Latex

Weight: 77 g
Size: 622 x 22-23 mm (700C)
Price: approx. \$ 12
Country of manufacture: France
Availability: Bicycle stores

I have used Michelin's latex tubes in tires up to 27 mm wide, without problems. They significantly improve the comfort of the bike. Since switching to more supple tires, I no longer feel the need for latex tubes. Many believe that latex tubes improve rolling resistance, but our tests have shown the opposite, a slight increase of rolling resistance. Other rolldown tests have confirmed this result.⁸ Another disadvantage of latex tubes is that they leak air, and need topping up at least every 30 hours. (JH)

Michelin Airstop A1

Weight: 95 g
Size: 622 x 19-23 mm (700C)
Price: approx. \$ 7
Country of manufacture: France
Availability: Bicycle shops

The standard Michelin tubes also are rated to 23 mm, but I have used them in tires up to 31 mm wide without problems. I appreciate their high quality. Whereas I have had other tubes fail at the valve stem or elsewhere, my Michelin A1 tubes have only suffered punctures, but no other failures. At 95 g, they are relatively lightweight. (JH)

Schwalbe SV12

Weight: 141 g
Size: 584 x 37-44 mm (650B)
Price: \$ 6
Country of manufacture: Indonesia
Availability: Bicycle shops, Vintage Bicycle Press

The Schwalbe SV12 is suitable for a variety of 650B and 26" tires. It mounts easily in all currently available 650B tires, from the 29 mm wide Michelin "Megamium" to the 42 mm wide Grand Bois "Hetre". For its size, the weight is average. It does not leak air, and it has been very reliable. (JH)

Conclusion

Maxxis' lightweight mountain bike tubes provide significant weight savings with few drawbacks. They also can be used for 650B wheels. The superlight 700C tubes appear optimized for narrow racing tires, which few real-world riders use. When used with 25 mm tires, they are literally stretched to their limits. For 700C bikes with wider tires, we prefer the excellent Michelin Airstop tubes because of their excellent quality and durability.

Notes:

- 1 Henry, R., 2006: Vélocio vs. the Tour de France. Bicycle Quarterly Vol. 5, No. 2, p. 1.
- 2 <http://search.bikelist.org/getmsg.asp?Filename=internet-bob.10801.1487.eml,status=5/15/2008>
- 3 Heine, J. and M. Vande Kamp, 2006: The Performance of Tires. BQ Vol. 5, No. 1, p. 1.
- 4 Heine, J. and M. Vande Kamp, 2008: Why Harder Tires Feel Faster. BQ Vol. 6, No. 3, p. 23.
- 5 tpi = threads per inch
- 6 Some have postulated that colored tires offer inferior grip in the rain.
- 7 see 2 (Heine and Vande Kamp, 2006)
- 8 www.hadland.me.uk/rolrec10a.pdf, status 6/14/08

