

TEST

Eleven wide racing tyres



THE WIDTH EFFECT

Wide tyres are „in“. Increasingly, race bikes are rolling out of the shops with 25mm-wide tyres. Is this fashion or technical progress? Our test checks the facts. We tested eleven tyres ranging from 23 to 28 millimetres.

Previously, the matter was simple. Fast racing bikes had narrow tyres. Very narrow, in fact. 18mm, up to 20mm at the very most was considered ideal. You pumped as much as your arms and the floor pump could manage. Hard was good, because narrow tyres were only sure of keeping firm if pumped chock-a-block with air. Otherwise, potholes and manhole covers would risk the tube being crushed and bursting between the rim flange and the tyre itself.

With today's customary 23mm-wide tyres, the risk of a puncture is low if they are pumped to a pressure which is sensible and adjusted to the rider's weight. The feeling of comfort is significantly better than with a rock-hard 20mm tyre. Nevertheless, there seems to be a trend towards racing tyres with an even higher volume. Not as exotic solution for torturous tracks in Belgium, but as normal tyres. Comfort racers have even been spotted with 28mm-wide tyres. But does it make any sense?

In order to examine the effect of tyre width, we have taken the 23, 25 and 28mm same-model versions from the market-leading manufacturers Continental and Schwalbe, and compared them with six wide tyres from other manufacturers.

We were especially excited to see how Schwalbe's new One tyre would fare. The completely newly developed top-of-the-range model ranks above Schwalbe's Ultremo, and is available in three widths. Can the One stand up to the tried and tested classic, the Grand Prix 4000 S from Continental?

PRESSURE TEST

First: the riding test. On a course comprising various surfaces and sharp curves, we directly compared all the tyres by running them on the same rims. We also experimented with the air pressure: the starting pressure for almost 80kg of system weight was 7.5 bar, which were then adjusted depending on the rider's subjective impression. Wide tyres simply felt too hard with this racing pressure. Wider tyres, according to the result of the comparative rides, need about 0.5 bar less pressure than the next-widest tyre class to achieve a ride which feels subjectively similar.

The most comfortable ride was achieved with the 28mm tyres at a pressure of 5.5 bar: the tyre still having plenty of reserve suspension travel due to its copious volume, while at the same time being barely at risk of puncture. Nonetheless, the steering performance was noticeably more inert at lower pressures – this was true regardless of tyre width. The additional weight of the wide tyres reinforced this effect. How a tyre travels, however, depends not only on its width and

TEXT

Robert Kühnen

PHOTOS

Makus Greber &
Robert Kühnen

SHORT AND SWEET

STATS

9,5

watts between the fastest and slowest tyres

20

percent more volume for a 25mm-wide tyre compared to a 23mm one (28mm: 50 percent more)

29

millimetres wide: the highest volume tyre testes (Challenge Paris Roubaix)

All test results start

ON PAGE 30

LEADER BOARD

Lowest rolling resistance



CONTINENTAL

GP 4000 S II 28 MM

Lightest wide tyres



MICHELIN

PRO 4 COMP LIMITED 25

Most agile steering performance



SPECIALIZED

S-WORKS 26





SIZE COMPARISON

The Continental GP 4000 S in 23mm (left) and 28mm widths. Difference: 50 percent in volume

pressure, but also on the construction of the carcass, on the contour and on the rubber mixture. The table on Page 30 summarises how the ride feel for each model. The pressure recommendations of the manufacturers vary widely, and correspond only partially with what is best in our experience. The recommended minimum

pressures are between 5.5 bar (Michelin 25mm) and 8.2 bar (Specialized S-Works 26mm), the maximum pressures between 7.5 bar (Michelin 25mm) and 11 bar (Vredestein 25mm). The recommendations of Michelin were those which most accurately matched our own impressions. Following the test runs, it was time to collect some data at our TOUR laboratory, where rolling resistance and puncture protection were tested, the tyres measured and the suspension stiffness precisely determined.



CROSS SECTION

Its yellow Kevlar cores make the Continental tyre foldable

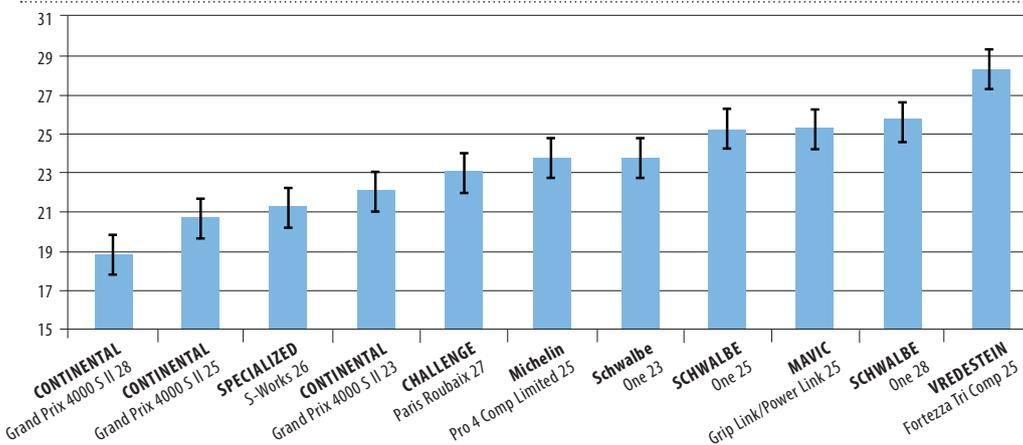
FORTIFIED

The Continental tyres' edges consist of a cut-resistant Vectran protection layer

WIDER = FASTER?

We first measured rolling resistance at 7.5 bar on our belt tester, which simulates a flat road. We also tested the 28mm tyres at 5.5 bar, to see whether it is possible that comfort and easy running could go hand in hand. In the rolling test, the fat, 28mm-wide Continental GP 4000 S II distanced itself from the other test specimens. This bulky wide tyre even rivalled the extra-light 23mm time trial tyres. The second and third places in terms of rolling went to the Continental 25mm and Specialized's 26mm – likewise wide tyres. Only then did Continental's 23mm appear in fourth place. So is „wider“ synonymous with „faster“? Not always. Schwalbe's new One range demonstrated the reverse trend: The 28mm was the slowest tyre from that range, although the gaps between them were very small and partially within the measurement tolerance. Overall, the difference between the fastest and slowest tyre in the test field was just 10 watts, given a speed of 35km/h.

ROLLING RESISTANCE



Rolling resistance compared: The lower the bar (pressure), the easier the tyre rolled during the TOUR test. This involved running the tyre on a belt, measuring the running resistance on a level surface (rather than – as with many other rigs – on drums which are generally too small and which therefore overstate the rolling values). Continental's 28mm displayed the least rolling resistance. Even when the pressure was set to a comfort-oriented 5.5 bar, resistance increased by just one watt – a very good result! Overall, the rolling resistances are fairly close together: the best and worst being just 9.5 watts apart. The error bars indicate the measurement tolerance of plus/minus one watt.



INSTEAD OF CHECKING BY HAND
The small pressure tester from Schwalbe measures very precisely

At a suspension-friendly 5.5 bar, Continental's 28mm was just approx. two watts worse than at 7.5 bar – on the flat reference surface. It was therefore the rolling champion in this test. Over rough terrain, one would expect that low-pressure thick tyres' advantage over harder-pumped narrow tyres would be larger still, as they roll more readily over bumps and thus require less energy. As regards cyclo-cross and mountain bikes, this link is obvious. Over more difficult terrain, those tyres which can be run at the lowest pressure have the edge. Up to this point then, there is much in support of the use of wide tyres on the road. They roll very well, even at low pressure (which improves ride comfort) – and they have a wider range of applications than narrower tyres.

MATCHING RIMS

However, the added aerodynamic drag needs to be factored in – and often this is the dominant resistance. The tyre also plays an important role in this respect. Tyre type and width affect the air resistance and must harmonise with the rim. What is more: the aerodynamic differences are larger than the small differences in rolling resistance. On standard rims, which are mostly 20-21 mm wide, a wide tyre is, from an aerodynamic point of view, something of a disaster. When it comes to top speed, wide tyres can only be considered if new, aerodynamically

favourable wide rims are used: for example the Zipp Firecrest range or HED wheels. Time trial professionals who rode until recently on 19mm narrow tyres, today race with this wide tyre combo.

We tested for puncture resistance using two laboratory tests. We simulated running over small stones with a prick tests, measuring the force required to push a blade through the tread of the tyres. Most tyres did well in these two tests, with the protective layers of dense special fabric effectively resisting intrusions. The Continental tyres displayed the highest resistance to cutting. Challenge and Specialized were the weakest in terms of puncture protection.

Wet grip on cornering was investigated by stunt rider Benedict Gerlicher, by entering a wet bend increasing speeds from one ride to the next, until the tyres lost their grip. The speed achieved on the bend is a measure of the grip of the tyre on wet asphalt. This test also allowed us to see how the tyres react at their limit. The Continental and Schwalbe tyres achieved the best outcomes in this test: they very confidently pursued their course and gave predictable feedback regarding their grip limits, regardless of the tyre width. On roads that are bumpier than the well-paved test bend, wide tyres will probably have the advantage, since they have better ride dynamics with correspondingly low pressure and thus maintain better contact with the road.

WIDE MEANS FLEXIBLE

After evaluating all data and how the tyres felt, it is clear that wide tyres are more just than a passing fashion. Continental's 28mm rolls with the least resistance, and the same manufacturer's 25mm GP 4000 S gets the overall award for this test. Both also allow for a more comfortable ride than standard 23mm tyres. Broad means flexible: you can adjust how the tyre feels with your pump.

You can choose to pump your wide tyres so that they are rock hard or comfy – as required – and offer a very good compromise between comfort and rolling resistance. For recreational cyclists, wide tyres are therefore a winner. But wide is not always better. Racers must ensure that they use appropriate – i.e. wide enough – aerodynamic rims, as too narrow a rim will, as a result of aerodynamic disadvantages, negate the small advantage in terms of rolling resistance.

WE NOTICED

28mm tyres do not fit all frames and forks.

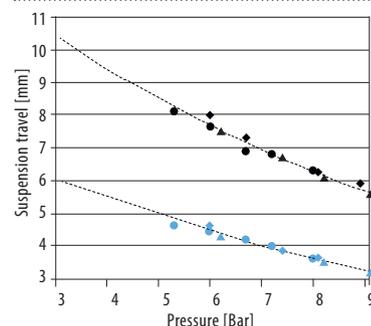
If they do indeed fit, the installation and removal of the rear wheel can be difficult – some air may have to be let out.

The **rim width** has an impact on tyre rigidity and steering performance. Wide rims give a more direct feel to the steering: changing direction is easier. The pressure can be reduced by about 0.5 bar on wide rims.

100g tubes of size 18-25 work the 28mm tyres to the limit. During the tests, some tubes burst in the valve area due to overstretching. Choose tubes of larger diameter if you go for 28mm tyres.

Two Schwalbe tyres jumped off the rim during **inflation with a compressor** – each when just below 8 bar. This happened with 25mm and 28mm tyres on rims that had been used so far without any problems. When inflated by hand, the tyre suffered no such issue.

SUSPENSION



The curves for 50kg (lower) and 100kg of load per tyre (measured for 23, 25 and 28mm) show how much the tyre compresses under load. The results are extremely close. This means that the tyre's cushioning depends on the pressure and weight load: the width plays virtually no role. Narrow and wide tyres of the same pressure cushion almost equally. Wide tyres offer more comfort due to the option of reducing the pressure more than is possible with narrow tyres.



MANUFACTURER



CHALLENGE

Paris Roubaix 27

www.challenge.tech.it

Model

Reference/info

Price

57 Euro

Width x height, weight

29 x 26,3 mm, 291g

Rolling resistance¹⁾

23,1 Watt

Puncture resistance²⁾

6 Second, 419 Newton

Wet grip/limit range³⁾

31,8 km/h/3,0

Weight (10%)



5,0

Rolling resistance (30%)



1,7

Puncture resistance (30%)



4,0

Wet grip (30%)



3,0

OVERALL SCORE (100%)

3,1

Ride feel

Neutral handling. Tyre gives little feedback as regards grip limit and suddenly slips when over the limit.

CONCLUSION

Made for rough roads, but also runs well on smooth roads. Puncture resistance not up to date. Difficult to fit, due to its design.



CONTINENTAL

Grand Prix 4000 S II 23

www.continental.de

Model

Reference/info

Price

54,19 Euro

Width x height, weight

23,5 x 22,9 mm, 220g

Rolling resistance¹⁾

22,1 Watt

Puncture resistance²⁾

180 Second, 628 Newton

Wet grip/limit range³⁾

34,6 km/h/1,0

Weight (10%)



3,3

Rolling resistance (30%)



1,3

Puncture resistance (30%)



1,0

Wet grip (30%)



1,0

OVERALL SCORE (100%)

1,3

Ride feel

Gives the impression of being a solid tyre. Reliably signals having reached the grip limit by stuttering.

A slightly revised classic: even faster; as good as usual in the other disciplines. Strongest competition: its wider versions.

TOUR 1/2014
TESTWINNER

CONTINENTAL

Grand Prix 4000 S II 25

www.continental.de

Model

Reference/info

Price

54,19 Euro

Width x height, weight

25,5 x 24,8 mm, 226g

Rolling resistance¹⁾

20,7 Watt

Puncture resistance²⁾

180 Second, 553 Newton

Wet grip/limit range³⁾

34,1 km/h/1,0

Weight (10%)



3,3

Rolling resistance (30%)



1,0

Puncture resistance (30%)



1,0

Wet grip (30%)



1,0

OVERALL SCORE (100%)

1,2

Ride feel

Solid road-holding, neutral handling, good absorption. Limit area signalled through the front wheel.

An all-round, trouble-free tyre: robust, quick and safe. When combined with a sufficiently wide rim, is a perfect competition tyre for sportive and time trial events.



CONTINENTAL

Grand Prix 4000 S II 28

www.continental.de

Model

Reference/info

Price

54,19 Euro

Width x height, weight

28,5 x 27,8 mm, 238g

Rolling resistance¹⁾

18,8 Watt

Puncture resistance²⁾

180 Second, 579 Newton

Wet grip/limit range³⁾

34,2 km/h/1,0

Weight (10%)



3,7

Rolling resistance (30%)



1,0

Puncture resistance (30%)



1,0

Wet grip (30%)



1,0

OVERALL SCORE (100%)

1,3

Ride feel

Feels very safe. Clear grip limit. Impressed on poor roads with adjusted air pressure.

The master roller. Faster than the rest. Top tyre for rough runs thanks to docile handling. Perfect for cobblestones.

MANUFACTURER



SCHWALBE

One 23

www.schwalbe.de

Model

Reference/info

Price

49,90 Euro

Width x height, weight

23,0 x 22,5 mm, 200g

Rolling resistance¹⁾

23,8 Watt

Puncture resistance²⁾

168 Second, 510 Newton

Wet grip/limit range³⁾

34,2 km/h/1,0

Weight (10%)



2,7

Rolling resistance (30%)



1,7

Puncture resistance (30%)



1,5

Wet grip (30%)



1,0

OVERALL SCORE (100%)

1,5

Ride feel

Gives the impression of being a solid tyre. Neutral steering, very safe ride feel. Signals grip limit well.

CONCLUSION

Good performance profile: grippy, triple rubber compound, very flexible carcass, good puncture resistance, low rolling resistance.



SCHWALBE

One 25

www.schwalbe.de

Model

Reference/info

Price

49,90 Euro

Width x height, weight

24,5 x 24,3 mm, 212g

Rolling resistance¹⁾

25,0 Watt

Puncture resistance²⁾

180 Second, 510 Newton

Wet grip/limit range³⁾

34,2 km/h/1,0

Weight (10%)



3,0

Rolling resistance (30%)



2,3

Puncture resistance (30%)



1,3

Wet grip (30%)



1,0

OVERALL SCORE (100%)

1,7

Ride feel

Gives the impression of being a solid tyre. Neutral steering, very safe ride feel. Signals grip limit well.

Doesn't roll quite as well as the narrower One 23, but is more comfortable. Good all-rounder for many purposes.



SCHWALBE

One 28

www.schwalbe.de

Model

Reference/info

Price

49,90 Euro

Width x height, weight

27,5 x 27,3 mm, 231g

Rolling resistance¹⁾

26,0 Watt

Puncture resistance²⁾

180 Second, 510 Newton

Wet grip/limit range³⁾

34,1 km/h/1,0

Weight (10%)



3,7

Rolling resistance (30%)



2,7

Puncture resistance (30%)



1,3

Wet grip (30%)



1,0

OVERALL SCORE (100%)

1,9

Ride feel

Gives the impression of being a solid tyre. Directs and drives just as good as its narrower versions.

Voluminous all-rounder. Very comforter at lower air pressures. The delicate side walls are puncture-prone on bad roads.



SPECIALIZED

S-Works 26

www.specialized.com

Model

Reference/info

Price

49,90 Euro

Width x height, weight

25 x 24,8 mm, 196g

Rolling resistance¹⁾

21,3 Watt

Puncture resistance²⁾

7 Second, 353 Newton

Wet grip/limit range³⁾

32,7 km/h/2,0

Weight (10%)



2,3

Rolling resistance (30%)



1,0

Puncture resistance (30%)



4,5

Wet grip (30%)



2,0

OVERALL SCORE (100%)

2,5

Ride feel

Dynamic steering performance. Rubber inspires confidences, but the grip limit is not very clear.

Lighter, higher-volume competition tyre; very agile. Below-average puncture resistance tarnishes the final grade.



MAVIC

Yksion Grip Link/Power Link
www.mavic.com

45 Euro

24,2 x 23,8 mm, 222g
25,3 Watt

180 Second, 500 Newton
33,0 km/h/1,0



2,0

Neutral handling, soft rubber. Grip limit noticeable through front wheel.

Paired tyres from wheel manufacturer with grippy compound at the front and a harder compound at the rear. Good all-rounder with balanced characteristics.



MICHELIN

Pro 4 Comp Limited
www.michelin.de

49,95 Euro

25,5 x 24,6 mm, 195g
23,8 Watt

180 Second, 455 Newton
33,0 km/h/2,0



1,9

Agile handling, hard rubber, firmer ride feel. Grip limit noticeable, but only slightly.

Lightweight version of the Pro 4: thin tread, very thin carcass. Direct, sporty ride feel; only slight absorption. Agile tyre geometry.



VREDESTEIN

Fortezza Tri Comp Slick
www.vredestein.de

46,95 Euro

24,8 x 24,3 mm, 245g
28,3 Watt

180 Second, 517 Newton
31,5 km/h/3,0



2,7

Medium hard rubber, neutral handling. Grip limit is poorly displayed, tyre suddenly slips away.

In the rolling resistance test, did not achieve the levels of the narrower Tri Comp Slick, but offers better puncture protection.

Germany, Continental production plant, Korbach, bicycle building section. Continental employee, Sigrid Lüdde | www.conti-bicycles.com



GRAND PRIX 4000 S II

with Handmade in Germany



In six new colours with the latest version of our BlackChili Compound: With improved mileage and sensational grip. Available from your dealer in spring.

Continental **GET THE GRIP**

