

# Winter clothing guide 2011/12





# “There’s no such thing as bad weather, just bad clothing”

**I**N this day and age of technical cycling clothing, the old adage (above) has never been more true. That’s all well and good, but what’s best? What should we wear on any given day? Is the most expensive jacket the best? With every company boasting its fabrics and cuts are superior, we sent our testers to ever colder and wetter climes to see who’s telling the truth.

For simplicity, we’ve split the winter into three climates, so whatever weather greets you, getting your wardrobe choices right should be a whole lot easier. Each climate section has a full rundown of the kind of weather you should expect, but as a brief outline we think the British winter season splits into:

**Rainy:** 7 to 12°C, full rain, wet roads but not cold  
**Winter:** 4 to 10°C, cold, grey and maybe some drizzle  
**Baltic:** -5 to 5°C, dry, very cold and often blue skies

The temperatures are useful as a guide, but be aware you may end up nudging into the zone above or below at times. On any given day they can



**7 to 12°C**



**4 to 10°C**



**-5 to 5°C**

effectively be moved upwards a degree or two when riding hard, or down if you’re riding steadily or taking it easy. Personal preference can also dictate the upper and lower limit of perceived temperature, but overall, these splits should help you make informed decisions on your outfit and prevent sartorial disasters. The Baltic zone has had additional emphasis placed on accessories such as gloves, head and footwear as it’s when it’s truly freezing that your extremities can really suffer.

At the opposite end of the spectrum, far more prominence has been placed on heat removal during warmer wet days. To that end, we’ve focused primarily on clothing that suits riding hard in the rain rather than necessarily being fully waterproof.

On top of the tested clothing, we’ve got all the advice you could ever need as well as tips from pro riders. We also visited some key players in the cycle clothing market to get an insight into the lengths companies go to prototype and test ideas, develop fabrics and create finished products.

Enjoy!

# Sportful vs Pearl Izumi — Italy vs USA

**TWO COMPANIES, SIMILAR** aims. Just how does this pair of industry clothing giants dress cycling's most promising athletes?

**W**E'RE entering a new era of performance-driven cycling kit, where fit and aerodynamics are just as vital as the fabrics themselves. Saggy and baggy will soon be a thing of the past and Sportful and Pearl Izumi, brands with very different backgrounds, are both driving this initiative, pushing the envelope to make riders faster and more comfortable. We had thought it would throw up some interesting differences, comparing the research and development processes of the Italian, family-run company steeped in heritage dating back nearly half a century, with that of a Japanese-founded, and now heavily American-influenced brand. After all, they are derived from very different cultures. However, what our factory visits actually uncovered was a number of unexpected similarities, with perhaps one major difference — the Italian coffee was much better.

The point of our visits was to show you the bits consumers never get to see; the 'behind the scenes' stuff, plus if we're honest doing some learning ourselves, and we were fortunate to get an amazing first-hand insight into how these two multi-sports clothing giants

go back and forth ('push-pull' in Pearl Izumi speak — the Americans have a slogan for everything), between athlete, designer and seamstress to take a garment from concept sketch to perfected piece and hopefully ultimately into your kit bag.

A key part of each company's modus operandi is the ability to deliver rideable prototypes for the body of an athlete in a matter of hours. Both companies, to their credit, rely heavily on direct interaction with trusted test riders and pro athletes and it's very much a two-way process.

## Marketing leader

The fundamentals might be the same but, not unexpectedly, the US has the marketing edge, and Pearl Izumi is proud of what it calls its Speed Shop, whereas the Italians are content with just referring to it simply as the factory floor. Call it what you like, it's where the magic happens. A mass of sewing machines, brightly coloured bobbins and highly skilled seamstresses are at work and when push comes to shove it's the

swift, nimble hands of these women (at least we never saw a single male sewing) that really affects the speed of the R&D process for both brands. It's hard not to feel like they are the unsung heroes of the whole process. They find the solutions to stitching together complex patterns conjured up in designers' minds and they're at the helm of making all the minute changes and tweaks that the athletes and testers feed back. What might start out as something akin to your mum pinning up your overly long trousers for the first day of school, soon becomes a close relationship involving the highly skilled needlework of the seamstress and the critical eye and experience of the test riders.

Quite simply, the test rider tests — be it in a wind tunnel or out on the road, or both — and the seamstress readjusts. The test rider tests some more, the seamstress tweaks some more, and so it goes on until the final piece is perfected. It might only be a few millimetres of nip and tuck here and there but that's the difference in performance these brands are looking for. The devil's in the detail after all. At every intersection the garment can be scrapped, started again, or modified right there and then and it's the speed and efficiency that is the valuable asset for trying new ideas and also developing existing ones. It's clearly more cost effective to be able to work



Italian seamstress at work



Load of bobbins



Pearl Izumi's Speed Shop

## Sublimation: secret of the podium

HAVE you ever wondered how the winner's jerseys are already prepared with the appropriate team and sponsor's logos for the podium? There's not a pile of 'one for every team' just in case, and there's not a crystal ball-wielding psychic predicting the outcome of the race, so how are the jerseys ready in time? As kit sponsor to several US and international stage races, Pearl Izumi's factory let us in on the secret. It's all down to a process called sublimation, a technology that vaporises solid dyes with heat, transferring them in a matter of seconds, directly to the fibres of the fabric, where it returns to a solid state once cooled. It's how most modern kit designs are made possible, and with a portable heat press, some ready to print jerseys and a few pre-prepared sublimation graphics, Bob's your uncle, they can be made literally in the time it takes the soigneurs to wipe the riders' faces down.



Stamping on the winning logos



Jerseys hot off the press

'in-house' and much faster too. There is no sending off patterns to a third party, and the inevitable delays associated with the to-ing and fro-ing. For both Sportful and Pearl Izumi it can happen pretty much in real time, governed by the speed the cutters can cut fabric, and how quickly the seamstresses can sew the garments together.

What you can be sure of is that kit from these brands has been around the block, figuratively speaking, many, many times before it makes it onto the hanger, an enviable process that not every company can indulge in and certainly one that guarantees maximum time efficiency plus suitably tried and tested, dependable end results.



Real world testing in the Dolomites

Photos: Pearl Izumi & Sportful



4-10°C

# Winter conditions

**BRITISH WINTERS REQUIRE** a thoughtful approach to riding gear. A combination of layered, breathable and windproof or waterproof clothing will keep you comfortable

**T**HE reality of a British winter is not one of endless months of snow and ice, or sub-zero temperatures. For two-thirds of this season we will find ourselves riding around in single-figure temperatures on days with flat grey light and dampness in the air. Many companies dazzle us with product designed for super-cold conditions but our relatively balmy climate requires something quite different. Riding hard means we overheat in fully waterproof or overly thermal jackets but keeping cold air off the chest and arms is still necessary. Likewise, we need to maintain enough warmth to ensure good blood flow in the legs without melting. A warm torso and legs will go a long way towards allowing the body to retain heat at the end of the limbs too. At the lower end of the temperature range, it is the extremities that need more care to protect them. Gloves need to be reasonably thermal without cooking your digits and feet will need some thermal and weatherproof covering too.

## TOPS

- Dress for the second mile — starting off a bit nippy will make sure you don't overheat five minutes into your ride.
- Choose a jacket that has windproof fabric just on the chest and arms. The more breathable standard thermal fabrics allow you to regulate temperature far more easily.
- A fleece-lined collar can make even a basic top layer seem luxurious and will keep your neck cosy and warm.
- As with any cycling outfit, fit is paramount. Flapping fabric not only wastes energy, it allows large air pockets to form, chilling you quickly.

## BOTTOMS

- Fleece-lined Lycra tights are pretty ubiquitous, but make sure the fabric has enough stretch to be comfortable, and enough shape to stay put.
- Some extra wind protection for the knees may be wise at the lower end of the temperature range — especially if it's damp.
- Make sure there are no creases behind the knees. If your tights are warm enough, the creases will hold sweat and chafe in no time at all.
- High-end tights with pads can work very well thanks to quality construction and fit, but padless tights allow use of favoured bibshorts and possible multi-day use if it's not dirty out.
- Foot loops or ankle zips have an even split of fans, so try both to see what works best — custom foot-bed wearers may not like the bulk of an extra fabric layer under the foot, but an ankle zip and overshoe zip can chafe the Achilles tendon with prolonged use.

## ACCESSORIES

- An overshoe will need to cope with moisture and wind, unless you get really lucky. The most important thing is fit with your shoes and cleats. Make sure they don't come up the sides of the shoe, or expose any vent holes.
- Gloves will need to be thick enough to maintain optimum hand temperature but be wary of going too big. Soaking wet gloves can be immensely uncomfortable so choose waterproof and breathable.
- A wind-fronted base layer will keep the chill off your chest should you need to pull down a zip when the temperatures rise or you are ascending.
- If you choose to wear a thermal hat or ear warmers make sure they are not too bulky to fit under a helmet should you wish to wear one.

## Altura Synergy jacket £69.99



THE Synergy is a practical, good-looking and well fitting jacket, perfect for a cold winter's day in the saddle. Specifically designed for women, the jersey consists of a number of multi-fabric panels, which not only give the jacket its 'performance' fit but also play different roles in protecting you from the elements; the front, shoulders and sleeve panels are windproof and water repellent and the back is made up of stretch thermal panels. Nice design touches include reflective trim, a zip draught excluder and two reasonably sized pockets which are large enough for tubes, levers, phone etc (although the zip on them may make stowing away things like rain capes a challenge). An excellent piece of kit for the price. HB

RECOMMENDED

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## Santini Prosoft tights £79.99



WE got the impression that these are more than just a tight for the lady — these are for girls who ride! Every aspect, from waist to ankle, has been well thought out and executed. The tights are constructed from multiple panels including a crescent-shaped one that sits high on your back and wraps around your mid-section securely, preventing gaping. A minor future request would be for the waistband to be slightly wider for a more flattering look. The white side panels, side reflective strip and reflective logo make these tights ideal for darker days or night riding. A Pro Grace women's chamois and silicon grippers at the waist and ankle help these female-specific padded tights score top marks. HB

HIGHLY RECOMMENDED

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### Rapha Pro Team Jacket £190

OF the two options, we went with the Chartreuse colour scheme (think tennis balls), which was preferable to the darker option and won our vote as a stylish stand-out colour without being fully fluoro.

The offset zip is a nice touch as you don't get the zip ruffling up, under the chin. It can take some getting used to, and when undone can lead to an offset larger flappy panel, but it's a good compromise for the comfort gained.

The jacket uses a mix of Polartec soft-shell where the wind hits you, coupled with SuperRoubaix on the rear and underarm panels. It performs well on the road with the zip easy to open when gloved when you need to vent for some extra cooling, but when it's chilly out, the high collar keeps the cold at bay. The price is typical Rapha, but it's matched with top performance. SR

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### Polaris Vortex bibtights £74.99

THESE tights look very stylish using a mix of fabric with Vortex windproof panelling coupled with something called ThermaStretch for warmth. Along with reflective decals and strips, the whole package looks very capable.

Getting a good fit, however, was a slightly different story. I have a rouleur's physique and am certainly no featherweight rider, so choosing the large size gave me the length that I needed, but the knees were slightly creased and the waist was also a bit on the saggy side.

On the road the fabric worked really well, although I did notice a breeze coming through on the non-vortex fabric, but it was a bitterly cold descent where I wasn't at working temperature. A better cut may have reduced this and the CoolMax gel padded insert is more than capable of giving adequate support providing the tights fit adequately.

These tights look good, are great value for money and the fabric is pretty rugged. If you can fit yourself into them, they would be a good buy. SR

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### Castelli Mortirolo WS Jacket £175

CASTELLI'S Mortirolo mixes a fleecy-lined polyester on the back and parts of the arms with Gore's highly breathable Windstopper X-Fast for the rest. A surface treatment also makes sure that rain and drizzle bead off the Windstopper. While not fully waterproof, it keeps prolonged misty dampness out and short showers at bay. Even when damp, the waffle-like lining ensures enough trapped air for warmth.

The jacket refuses to ride up at the rear, thanks to excellent silicon grippers and the arm cut ensures no flap, or air pockets to chill on long descents. If we were being picky we'd like half an inch added to the sleeve length, but to be fair, Castelli's gloves have long cuffs, and the airflow over the wrist makes warmer use more palatable with gloves removed. On balmy days you'll notice how good the Windstopper fabric is.

We often felt moisture on the external face of the fabric as it moved sweat from our skin to the outside. Chest vent zips also allow some airflow when exerting yourself and the positioning prevents cold airflow onto the chest or kidneys. Combined with a superb high, yet comfortably soft neck design, the Mortirolo has quickly become a firm favourite. NW

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### dhb Pace SR Windproof bibtights £82.99

THESE tights may well be dhb's most weather-proof, but the performance of the fabric led us to slot them into the winter section. MITI's SuperRoubaix fabric uses a hollow-fibre polyester

for its inner fleecy lining and while it adds plenty of warmth, it doesn't get overwhelmed when pushing on. With the Windslam panels only extending over the knees, it offers enough extra protection without restriction. Of all the tights we used, the dhbs had one of the widest usable temperature ranges; the padded version tested has an excellent Cytech Tour pad (a padless version is available for £76.99) and with thermal fabric making up the whole bib sections, there was an added element of warmth.

For reference, we combined the jacket and tights with a thin, fast-wicking, long-sleeve base layer, perfect for the 4 to 7°C degree temperatures ridden in during the testing, even when descending for prolonged periods. NW



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### Giordana Silverline £97.99

OVERALL, the fit of the Silverline jacket was very good. All the important parts like neck, arms and chest were well in proportion, so we suffered no unsightly draughty gaps or a tight neck. Classic Giordana Euro-Italian colouring makes this perfect for riding on dull days or a night-time commute and the showy new Corsa fabric — a three-layer

system that has a fleece liner and a waterproof and windproof Windtex middle — meant that it was super thermal. The breathability isn't as effective as more expensive jackets, but thermally it's very good, making it perfect for long, steady winter rides with just a thinner base layer underneath. Pocket capacity was good, but we weren't keen on the clunky-feeling zips, personally preferring something more svelte. With a price tag of less than £100, we could certainly overlook these shortcomings, though. JC

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### Nalini Pro Winter tights £109.99

MUCH like the Gore tights we tested in the Baltic climate section, these Pro Winter tights from Nalini suited taller riders. Whereas the medium fitted the 30-31in waist, they were too long in the leg for anyone below 5ft 10in. These are definitely one to size up before buying. If the shape suits, however, the ankle zips never pulled up, clicked or stuck; the reflective elements are well spread and sensibly placed, the fabric is warm enough and very good in moisture-laden atmospheres.

Overall, the quality of manufacture and finish is superb and at this price difficult to beat — just the pro race-centric fit gives us reservations. HB

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BIBTIGHTS

WINTER JACKETS



Le Col Kuro tights £149.99

BBB Quadra £59.95



Mavic Equipe £115

Etxeondo Bock £79.95



Lusso Carbon Thermal £59.99

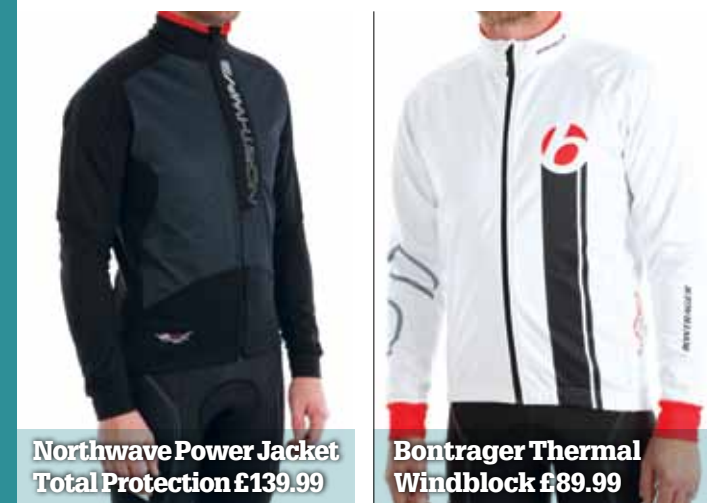
Nalini Pike £109.99



Force GB Winter £70.50

Moa Sirma £199

Gore Ozon WS Long £109.99



Northwave Power Jacket Total Protection £139.99

Bontrager Thermal Windblock £89.99

**Specialized Eureka jersey £59.99**  
 The Eureka jersey has a reassuring weighty feel to it so that, although not oozing with features and technical attributes, it'll become a favoured winter garment for many a season. Made using VaporRize fabric, the jersey has the ability to move sweat away from your skin, so if you do find a challenging climb mid-ride, you won't be wringing wet at the top. Specialized has kept the design simple with just small reflective sections on the rear pockets and side of the neck. With only two pockets, though, you may need to use a saddlepack to ensure you have enough space for a spare layer and snacks. HB

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**Northwave Crystal tights £49.99**  
 Designed for ladies who don't wish to be clad in skin-tight apparel, but still like to ride all year round. Despite using a Women Performance chamois, they weren't as comfortable as other female tights on test as the looser fit meant the chamois didn't stay in the correct place all the time. The lack of silicon gripper on the waist, while comfy, also meant we had to pull the tights up a few times. That said, if you're looking for budget tights to keep warm on a short winter commute, these do the job. HB

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**Polaris Tornado £79.99**  
 It is a good day when you come across a great-performing garment and are pleasantly surprised once you check the price. The Tornado is one of these pieces. It uses a Thermastretch fabric creating full windproof chest and sleeve panels, but also the fleece rear face means its warm, it's plenty breathable (often a failing on cheaper garments) and has enough stretch. We liked using the thumb loops, which held the sleeves in place when putting gloves on and the extended high collar was perfect at keeping out the wind when on the drops. A really warm, good value for money jersey. HB

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**Giordana Trade Team tights £118.99**  
 We've had good experiences with Giordana in the past and had high hopes here. We weren't let down. The Trade Team tights were an excellent fit — slightly tight in the bib when stood upright, yet perfect in riding position. Made from SuperRoubaix fabric, they were cosy and warm, but thanks to a mesh vent at the back of the waist we didn't overheat, even paired with the super-warm Polaris jacket. We found these tights very easy to wear. With tight-fitting reflective ankle zips and bright graphics they were bob on for a night ride too. Full marks Giordana. HB

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Base layers



Specialized Deflect 1st layer £34.99



Nike Pro Combat Hyperwarm Shield £36

Gloves



Moa FT Therm £49



Sportful Pursuit Tech £45

Overshoes



Louis Garneau Thermal Plus £34.99



Prenidas WindTex Stretch £25

Headwear



Rapha Merino Hat £35



Sportful Windstopper TV £18



# MITI: winter clothing's best-kept secret

**THE CHANCES ARE** if you've cycled in the winter at some point in the last 25 years, you owe a portion of your comfort to this innovative, little-known company from Urgnano in Italy

**W**HILE the fabric has become known as Roubaix, it's worth remembering that this brushed-back, comfortable and warm material was invented by Italian firm MITI 25 years ago. The company has constantly evolved its product, improving stretch and finish, along with longevity and durability as yarn and knitting technology, alongside its knowledge, has improved.

MITI's high-end thermal fabrics can be split into two basic families — SuperRoubaix and ThermoRoubaix. The latter was developed for colder northern European climates and uses a hollow fibre polyester yarn for the brushed side, while SuperRoubaix sticks with polyamide for both the inner and outer faces of the fabric.

Despite this apparent simplicity, there are many different versions available. A carbon-thread option is offered to improve heat transfer; different brushing techniques are used for softer, thicker, or thinner piling; there are finishing treatments — such as a DuPont Teflon (a registered trademark of DuPont used under licence by MITI), a water-repellence treatment; pocketed or channelled insulation designs and surface patterns as well as the basic colour palette.

Before counting custom colours, there are more than 20 different fabrics in these two Roubaix families alone. Whether you're wearing a genuine

MITI fabric or not, as a UK cyclist you have a lot to thank this pretty much unknown marvel of a company for.

### Divine inspiration

Like all of Italian cycling's best stories, this one begins with an industry 'hero'. A famous Italian cycle clothing baron used to ride all year round in northern Italy and was tired of being cold and uncomfortable during the winter months. In the mid-1980s, cycling legwear was made from an acrylic and wool mix. It was neither particularly stretchy, warm or comfortable. Knowing the designers and technicians at MITI (they supplied his company with other fabrics) he told them he wanted to come up with an alternative. A fleecy-backed, thick, stretchy fabric — and so SuperRoubaix was born.



MITI first began production in 1931



## How it's made

UNTIL 2007, MITI made all of its products in Italy and had done so since its inception in the valleys below San Pellegrino in 1931. Three years ago, it moved the production of the base fabric — greige — to a new plant (set up and owned by the same family who own MITI) in Hungary. Located just over the Austrian and Slovenian borders, the Mititex plant is a 6.5-hour drive from the MITI dyeing and finishing plant in Lombardy — vital as the Italian plant gets through a lot of greige.

With a truck arriving at least every two days, the plant produces over 10 million metres of finished fabric a year. To produce a finished beam (think roll) of greige fabric, up to six mega-bobbins of yarn are slotted into the industrial warp knitting machines. Weighing 1,000kg each and with up to 1,000 individual yarns on, these six tons of yarn are threaded by hand.

A day minimum is set aside for the process but, once set up, the machines can run for up to two weeks non-stop. Because of this long set-up process,

MITI has chosen to go down the quality route. There are very few trusted yarn suppliers and with the vast majority coming from Europe, it's said that the consistency is better, resulting in fewer flaws in the finished greige and less machine downtime.

Its regularity of production and constant innovation in fabric production has allowed the company to remain a viable option for clothing manufacturers, despite Far Eastern mills being able to produce similar-style fabrics at far lower prices — sometimes a quarter less.

### Manufacturing process

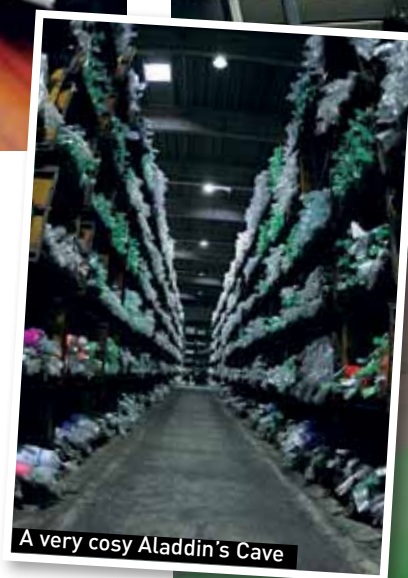
Once in Italy, the rolls of greige are dry cleaned to remove the oils and residue present on the yarns that aid the commercial knitting process and then transported to the dyeing hall. Two types of machines are used depending on the material type. Jet dyeing machines allow the fabric to move around in a chamber filled with the dyeing liquid. In the beam machines, a whole beam (roll) of greige fabric is wound around a perforated drum.

This whole beam is then placed inside

the machine. Dye is forced — from the inside — through the rolled-up fabric under intense pressure. From the dyeing hall, the fabric moves on to be set. This involves it travelling through a series of increasingly hot ovens and slowly being stretched to leave the 70-metre long machine at the correct width.

It's not until the next stage that the greige becomes the SuperRoubaix fabric we all know. Brushing machines are nothing spectacular, but MITI has some pretty technical modifications and they didn't let us photograph it to protect their innovations. The basic premise is that the fabric brushes up against metallic rollers that will pull designated fibres on the inner face away from the top layer.

This is what creates the 'fluffy' internal fabric surface. The trick is getting the exact amount of resilience, feel and texture without damaging the upper layer or tearing too many fibres. After brushing, the fabric is quality controlled by eye before barcoding, wrapping and being sent to the warehouse or dispatched to a clothing manufacturer.



A very cosy Aladdin's Cave



Above: The died greige fabric prior to being brushed  
Below: Post process, the visibly thicker thermal material

MITI: 80 years of passion in knitting innovation

# Neil Webb's Glove obsession

**CREEPY, YES, BUT** let our tech writer take you by the hand and guide you through the options

**S**OME may go as far as to call it a fetish, but my self-confessed obsession with finding the ultimate glove (it was present long before arriving at *CW*) has resulted in a substantial collection. It is not a case of hoarding though; it allows me to be as condition-specific as possible.

My 'collection' still splits down into three basic climate zones — just like our supplement here — but within each there are dedicated gloves for much tighter temperature bands (or exertion levels). At the top and bottom of each there is also some crossover. A glove great for the upper reaches of winter can

work well in wet weather too if it's just prolonged showers and it has some kind of weather proofing.

We still maintain that to ride year round, a minimum of three gloves are needed. There are two ways of approaching this: 1, just use our advice and round-ups to choose a glove for each climate but, personally, I prefer option 2, get yourself a pair of silk glove liners. Other companies may offer merino, or synthetic liners but the inevitable bulk means you will struggle to get them under many well-fitting gloves. Silks will slip into anything and add a season to any gloves you have. A thin windproof becomes good down to four or five

degrees. The winter glove suitable for such temperatures is good for closer to zero. At around a tenner, there is nothing this hand and shoe obsessive can recommend more highly.

My wardrobe of gloves has grown over many years, and the fact that it is so big means individual items last far longer. Don't be afraid to get something you see in a sale even if you have an equivalent already. It will undoubtedly do something just that little bit better and could be the start of a long-term 'thing'. With the right glove choice, you can banish cold fingers to the past, whatever the skies throw at you.



## PRO ADVICE

**Becky James,  
Team GB**

"To keep my hands warm when it gets cold I have these hand warmers (you break something inside it and it heats up). I put hot squash in my bottle, which doesn't last very long, but it's nice to start the ride."



**Alex Dowsett,  
Team Sky**

"It's all about the hands and feet; if they're cold or numb your ride will be miserable. You can get drawn into thinking three pairs of socks is the key; however, circulation is far more important — your hands will freeze in seconds if your gloves are too tight. So make sure your gloves, socks, shoes and overshoes are all on the loose side."

"I also use Breeze Blockers on my handlebars. They look like a carbon-fibre DD bra sat on the front of your bike but you can tuck your hands away from the wind."







# Moist conditions

7-12°C

**RIDING IN THE** rain doesn't mean dressing like you're fishing on the North Sea. For best results, pair a lighter breathable shell garment with a thermal mid-layer

**W**HEN you think of riding in the rain, your first thought may well be of waterproof jackets, but for the majority of riding in the UK, a fully sealed jacket may not be the best way forward when the heavens open. As clouds hold warmer air near to the ground, it's rarely actually very cold when it's raining. Because of this, riding in the rain is often actually better undertaken with a lighter, more breathable shell garment that will keep wind off over a thermal mid-layer to maintain some heat.

If you are riding very hard, a weather-resistant gilet, thermal or

otherwise, may be a better bet. With a warm trunk, we'd expect you to be fine on rides of a couple of hours. There are also coated garments that shed water for an hour or so and once they become sodden, retain their warmth. The theory is exactly the same: if you ride hard in the rain, you rarely get too cold.

Fabric companies are always improving their breathable waterproof fabrics, and, to that end, we've put a few top-spec waterproofs through their paces to see just how breathable the fabric is becoming, and how the latest stretch materials allow a far better fit than any of the flappy, plasticky-feeling pac-a-macs of old.

## TOPS

- A water-resistant jacket with superb breathability will be the best bet 90 per cent of the time.
- Water gets in everywhere — so if you do opt for a totally waterproof jacket make sure all of the seams are sealed too (especially on zipped pockets).
- Plan an outfit that's flexible. If it stops raining, anything you need to remove will have to be packed into your pockets.
- If you don't use mudguards, or others on your ride don't, you will get filthy. Be sensible in your choice of jersey colour, especially if you'd like to maintain it.
- If you forgo serious weather protection, make sure your thermal layer maintains its properties when sodden as wet clothes can lose heat very quickly.

## BOTTOMS

- Ever rider needs a pair of thicker Roubaix-style fabric shorts. Teamed with knee-warmers they are as good as three-quarter knickers and if it's warmer, they work well paired with embrocation.
- Full-length legwear also needs to be flexible. If you go for a coated bibtight, make sure it's not too thick or you'll overheat, negating any moisture protection.
- Don't underestimate the damage that can be done from friction rubbing between your saddle and fabric from grit and gravel flicked up from the road on a wet day. While they're not actually clothing, good mudguards are a godsend for any cyclist's winter 'wardrobe'.

## ACCESSORIES

- Knee-warmers and shorts are a lot more versatile and cheaper than three-quarter length knickers and, in our opinion, look better for some reason.
- Cotton cycling caps keep the worst of the rain off your head without overheating and keep the worst of the spray out of your eyes too.
- When it's really wet, your feet will be soaked in no time. Try using a thin PU-coated Lycra overshoe to keep the worst of the wind chill off your wet feet.
- Also use a base layer that has good wicking properties to ensure moisture can be transferred away from the skin.
- Natural fibres such as wool are good at regulating body temperature, especially when damp and against the skin. The wool layer provides some warmth, without overheating the wearer.
- If there's enough room in your shoe, a windproof or waterproof sock is an option, or buy a pair a size larger and stick them over your shoes.

## Sportful Fiandre No-Rain Light £135

Cycling WEEKLY

SPORTFUL'S tag line with the 'light' version of its Fiandre top is "weight and fit of a jersey, but protection of a jacket" and it has delivered on both counts. It's a very versatile piece. A lighter, four-way stretch Windstopper fabric protects your frontal area, proving ample defence against

RECOMMENDED

wind-blown rain and spray. The thermal Roubaix rear panel offers enough breathability so that the wearer doesn't overheat when effort levels rise, but a No-Rain treatment means it's got your back in the wet too, as water runs off in all but the biggest deluge.

When I was climbing to higher altitudes where temperatures dropped near freezing, I was still just about OK with a long-sleeved, thermal base layer underneath. It feels so thin, it's hard to believe. I'd have liked a touch more sleeve length to rectify an irritating half-inch of wrist exposure despite a good fit elsewhere.

Regardless, this could become the 'go-to' jacket for most of my UK winter riding. SB

9



## Sportful No-Rain bibtights £90

Cycling WEEKLY

THE beauty of these thermal bibtights is the whole surface area is No-Rain treated so your legs are drier all over. It's a far better system than just having panels to defend against surface spray. The coating is highly durable and it doesn't affect breathability, so if the sun pops out mid-ride, you don't cook. The fabric is relatively thin, so even if you get a proper drenching and the No-Rain treatment can no longer cope, the fabric never feels heavy or uncomfortably waterlogged.

HIGHLY RECOMMENDED

Personally, I prefer the lack of ankle zips, as it makes for a much cleaner fit, with nothing to irritate (or leak), although it makes getting them on interesting. Overcome that small issue and the fit is superb, offering a good balance of muscular support and freedom of movement, with a top-class padded insert and an extremely reasonable price tag to boot. SB

10

### dhb Ultralight gilet £29.99

**Cycling WEEKLY** AN impressively lightweight gilet, perfect for changeable conditions — if it does brighten up it comes with its own hand-sized pouch to pack away and stow in your back pocket. This featherweight item might scrunch down to a small package, but still carries some well-thought-out features such as a fleecy neck collar and reflective detailing. For the price, weight and size, it's blooming brilliant. HB

RECOMMENDED

9

### Moa Mezno ladies' jersey £89

SLEEK, simple and black with an accent of red, it's not surprising to learn that the Mezno is designed and made in Italy. The mid-weight thermal jersey is great for keeping you warm when wet and combining with a windproof gilet/undervest guard against wind chill. Closer fitted tailoring and more rear pockets wouldn't go amiss and it's a tad pricey, but it's an easy piece to wear and will be compatible with a fair percentage of your existing bike kit due to its minimalism and versatility. HB



### dhb Ladies Pace padded 3/4 bibtight £38.99

**Cycling WEEKLY** THREE-QUARTER tights for women can prove hard to get, so we're really pleased to see dhb's padded version hitting the market, especially with a very respectable price tag. The bibs have a high front to them, which also doubles up as an extra torso layer, which you'll need to factor in when selecting a base layer to ensure you don't overheat. The 'women performance foam' chamois has, as its name suggests, been designed with the ladies in mind, so has padding where it's needed. Constructed from multiple panels, these 3/4s have nicely contoured legs, but we do think that longer-legged ladies may find the length slightly short, which can create rucking behind the knee. As ever with dhb, performance and price are excellent so if the fit works for you its good value for money. HB

RECOMMENDED

9



### Louis Garneau Mondo jersey £124.99

**Cycling WEEKLY** THE heart of this outfit is the Louis Garneau Mondo jersey. Designed based on feedback from its sponsored athletes wanting a training jersey for when there's a bit of a chill, the fit is incredible. There is simply no excess material, and it achieves this without feeling constrictive or having a single rubbing seam. The collar is low, as dictated by the requests of team riders not wanting to overheat when training hard and as such requires a tall neck on the weatherproof layer. NW

RECOMMENDED

9

### Le Col Mariana winter gilet £129.99

**Cycling WEEKLY** THE Le Col gilet matches the Mondo fit-wise and has the requisite tall collar. The soft-shell fabric keeps a lot of water out thanks to the surface treatment and windproof membrane and there is no denying the quality and aesthetics. Colour-matched reflective details are a nice touch and the extra pockets are a godsend as the excellent fit and thermal nature of the gilet make lifting it for access to jersey pockets not only difficult but undesirable. NW

RECOMMENDED

9

### Bontrager Race Thermal bibshort £74.99

**Cycling WEEKLY** BONTRAGER'S Race Thermal shorts and matching kneewarmers have contrasting stitching, which emphasises the complicated panel design. Despite, or perhaps because of, the value price they were a little lacking in finishing detail, with a few wayward stitching loops visible. Coming up larger than some manufacturers' items, we did need to try them on a number of different testers and found they suited the longer limbed rather than wider proportioned. They are long in the leg for anyone though. NW

RECOMMENDED

8

### Bontrager kneewarmers £29.99

**Cycling WEEKLY** UNLIKE single tube-style warmers, Bontrager's use panels to make up the fit. This complicated initial fitting (is this the front or back?) but once sorted, the extra seams caused no rubbing and we experienced very little movement. The flexibility of the two parts was also very good — pulling them off for long climbs allows heat reduction, while the Roubaix-style fabric maintained enough thigh warmth. The looks also win out and looking good is half the battle. HB/JC

RECOMMENDED

9

### Assos rS.sturmPrinz jacket £348.99

**Cycling WEEKLY** THIS is the first jacket Assos has made as a proper waterproof shell. Using a proprietary fabric, Triton, it is the first piece that the Swiss company has made where it has said "sod the bean counters". The price is astronomically high as a result, but the fit and performance are top flight. The jacket isn't 100 per cent waterproof — some of the seven different textiles used prevent this — but the front features sealed seams and never leaked during testing. Adjustable, elastic-fit collar and cuffs prevent any wind ingress, and the mix of subtle stretch and super-elasticated panels prevent any ruffling. The mark belies the performance, but we struggle to give a £350 rainshell a higher score. SR

RECOMMENDED

7



### Lusso Max Repel bibtights £59.99

**Cycling WEEKLY** THESE tights repel water and give high insulation, using one fabric all over unlike other brands that use a mix. There is no insert but personally I prefer wearing a pair of bibshorts under tights in winter. The fit is snug enough that there is no wrinkled fabric and the white seams on the front add a touch of class. Lusso might not be seen as a prestige brand to some, but these are a superb pair of tights for the money. SR

RECOMMENDED

9

## Santini Feel Fuga H2O Jacket £194.99

KEEPING the rain out and not overheating is the Holy Grail of bike apparel, and Santini seems to have found it in its Feel H2O range. The jacket fitted like a race jersey, having good flexibility on the elbow and shoulders. We were really impressed by just how water-resistant the fabric remained in use. It promises long wash-resistance too, so if we find out different, we'll let you know. With an internal windproof membrane on the shoulders and front, it could double up for use in winter with a thermal base layer. It is realistically limited to the lower half of this temperature band, but the crossover into the one below makes it worthwhile all the same, and helps justify the substantial cost. NW

8



## Santini H2O Bibtights £132.49

WITH the H2O bibtights getting the same surface finish, it's unsurprising that we liked them too — the temperature comments apply here too, though. Santini's stretch chamois gave us no problems and allied to the superb elastication qualities of the fabric meant we had no issues with movement or chafing. The lack of wrinkles or looseness around the knee was particularly good. Top it off with sensibly placed reflectivity and you are on to a well-made winner. NW

9

## Pearl Izumi P.R.O. Aero Vest £79.99

**Cycling WEEKLY**  
**RECOMMENDED**

THIS is probably the best gilet I've used. Flapping fabric is all too common with gilets but this vest uses a P.R.O. Softshell Lite fabric which gives a snug fit. On first ride over a long-sleeved top I barely realised I was wearing it. At

110 grams, it's light enough to stow in your jersey pocket as well. It's remarkably showerproof and breathable and ticks those boxes along with customary reflective decals. When combined with a substantial thermal mid-layer, it's an ideal wet-day garment with a good enough fit and versatility to justify the price. SR

9



## Pearl Izumi P.R.O. Thermal Bib Knicker £119.99

THIS is based on Pearl Izumi's successful P.R.O. bibshort, but has additional warmth thanks to the thermal microsensor fabric. The long inseam extends midway down the calf, assuming you have the correct body shape. At just over 6ft 2in and usually a large, the size L came up short in the leg while fitting well over the rest of the body. The seamless chamois had no chafing or pressure point issues, no doubt down to the four different layers in its make-up. Subtle reflecting strips and decals look good. A great performer but it's a shame about the fit. SR

8

### Gloves



◀ Giro Ambient £44.99

▶ Hirzl Gripp Tour FF £49.99

### Overshoes



◀ Altura Ergofit £24.99

▶ Castelli Nano £36.00

## Gore Bike Wear Oxygen Active Shell £180.00

**Cycling WEEKLY**  
**HIGHLY RECOMMENDED**

GORETEX Active Shell is the waterproof fabric giant's latest rainproof material. Far more breathable and lightweight than previous offerings, this whole jacket comes in at under 200

grams and easily stows in a jersey pocket. Long in the arms, the raglan cut and stretch fabric ensure there is no excess fabric. The cuff detail is probably the standout feature. Vertical zippers are set in a super-soft, stretchy fabric and open out revealing a wedge of mesh. Not only does this ease getting it on and off on the bike and remove the need for Velcro or elastication but it offers airflow over the surface veins when going hard without opening up the internals and ruining weatherproofing. The fabric is noticeably more breathable and if you need a full waterproof jacket, we have yet to find better. NW

10



# Schoeller – the fabric of technology

SWITZERLAND'S THE PLACE to go for cutting-edge clothing design...

ALMOST every clothing manufacturer claims its latest fabric will outperform both its own previous offerings and anything from a rival's collection. While its pattern-making and ideas may come from its

own drawing boards, the fabric from which they are sewn will come (99 per cent of the time) from another manufacturer. We've talked about M.I.T.I. as one such production house many companies turn to, but if they are looking for a seriously techie material, one place they will often come calling to is Swiss textile company Schoeller AG... provided their pockets are deep enough, that is.

After starting out in 1868, this family-owned company became a huge cotton weaver and retailer in Switzerland with over 3,500 employees in its heyday. As world economies changed and the cotton

industry moved away from mainland Europe, the family decided it needed to specialise if it wanted to progress. Since this direction change it has worked with yarn manufacturers and chemical giants to develop a portfolio of products at the forefront of fabric performance.

As a huge brand in equestrian sports, Schoeller developed a stretchable waterproof fabric for use in

riding legwear. This type of fabric has a fleecy back bonded to a polyamide outer surface. The inner adds warmth, while the outer can be made waterproof with surface finishes. While initially quite specific to a given discipline it became obvious that Schoeller was on to something special. As something we take for granted it may not seem important but it was a Schoeller fabric that changed the outdoor clothing market more than anything else since its introduction in the early 1990s.

No one is really sure where its common name 'soft shell' originated, but these fabrics allowed manufacturers to replace separate fleece and shell garments with, in effect, a single layer, significantly reducing bulk. Add in the four-way stretch characteristics and it is easy to see why the fabric was a genuine game changer. The resulting reduction in the thickness and fantastic fit of many of the winter jackets we tested in this supplement is down to innovative ideas such as this. Even if Schoeller fabrics are not used, their influence on the market is plain to see.

Not content with almost single-handedly changing the outdoor enthusiast's wardrobe with one innovation; the staff continue to develop their many ideas. The ability to produce fabric at their Swiss base allows them to test prototypes incredibly quickly. In-house laboratories and development departments also speed the process up no end, with no need for outsourcing or sub-contracting when it comes to scientific knowledge or innovation.

When the boss wanted to produce a fabric with similar characteristics to leather but with better performance in the heat for his days out on a motorcycle, Schoeller contacted DuPont to enquire about the super-tough Kevlar yarn — used in bulletproof vests. Despite being told it wouldn't be able to produce a stretch fabric incorporating the aramid (Kevlar is DuPont's brand name for this particular super-tough polymer) it they use its extensive knowledge and loom technology to prove the chemical giant wrong, resulting in another world first.

## Future innovation

There are many more patented products in the range including an innovation called DNA-TEX that allows

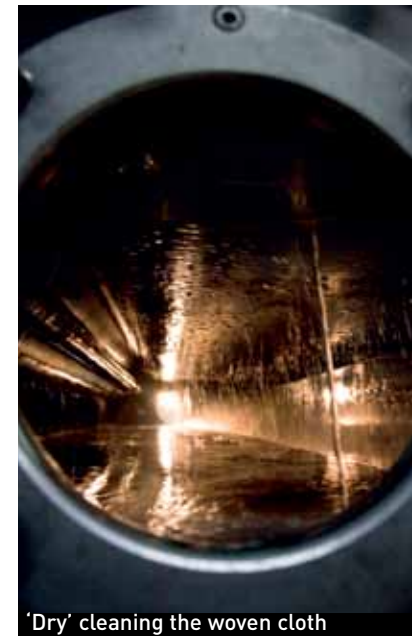
Where the magic happens



Miles of looms



Photos: Daniel Gould



'Dry' cleaning the woven cloth



Computerised colouration



Half an acre of product swatches



Schoeller: brave new world of fabrics



Testing the light-fastness of colours

manufacturers to simply scan a garment to make sure it's a genuine Schoeller fabric. It was an early pioneer in the use of silver for its anti-bacterial properties and there are numerous surface finishes within its line-up. Not content with coating the outer surface of fabrics with NanoSphere water and stain-resistant coating, it developed a process that treated the inner and outer surfaces. 3xDry has a stain and water-repellent coating similar to NanoSphere, but the inside is treated to improve moisture absorption, allowing it to transfer faster through the fabric.

One of Schoeller's products that's becoming well known within the cycle trade is ColdBlack. This involves a two-stage dyeing process that prevents the fabric and thus the wearer from heating up too much in direct sunlight — see the ColdBlack boxout for more information on this amazing fabric. For the other end of the temperature spectrum, there is a fabric within which there are liquid-filled microcapsules. While solid when cold, the contents liquefy when warm, slowly releasing their stored energy, warming you up rather than relying purely on the latent temperature of the

trapped air, making it perfect for use in gloves and outer wear for high-mountain use.

Another temperature regulating innovation is 'c\_change'. The chemical properties in the yarns used allow the fabric to become more permeable to moisture when warm while retaining water and wind resistance. Independent lab tests have shown it to allow more than twice the amount of moisture through at 20°C than 10°C. One thing is for certain in all this: Schoeller's relentless innovation can only be a good thing for the future of cycling clothing.

## ColdBlack: hot property

WE tried a ColdBlack product for the first time in the spring of this year and to say we were impressed would be an understatement. At the time we knew very little about the treatment and decided it must be some kind of voodoo. The trip to Schoeller's base gave us some answers.

The sun's heat affects us as the light at the infrared end of the spectrum touches our skin or fabric. The treatment allows the fabric to reflect both the visible and invisible infrared rays, so less heat is absorbed. Its genius is in its simplicity as an idea, yet it takes a company with the technology and vision such as Schoeller

to first come up with it and then perfect it. Add in the fact that it gives a minimum of SFP30 and there is very little not to like. It would seem as though we are not alone in our appreciation of the concept as we were shown a long list of companies that will use the product next season, including Gore Bike Wear, Pearl Izumi, Rapha and many others: this is one innovation well worth checking out.

The temperature with the ColdBlack treatment...



...and without





-5-5°C

# Baltic conditions

**IT'S STILL POSSIBLE** to get out for a ride, even in the very coldest conditions we experience in Britain. It's all just a matter of the right kit and equipment choices to stay comfortable

If the last couple of years are anything to go by, we are likely to have some snow this winter. With this comes very cold temperatures and even if the snow doesn't come there are often a few cold snaps with temperatures hovering around the freezing point. Even if you choose to swap the roads for tracks on a mountain or cross bike, the clothing you'll need to don will be a step up from the standard British winter fare we have seen already. While it may seem extravagant to blow a large chunk of cash on an outfit for these Baltic conditions, it's worth remembering that they can double up for use on

slower steady rides at the lower reaches of winter where you'll be producing less body heat.

While it's possible to get around the need for super-warm tights with clever doubling up of knee or legwarmers and layering winter jackets or a jacket and shell, the extremities need dedicated items. Thicker gloves will maintain heat in little-used fingers; overshoes will need to be thicker or perhaps twinned with oversocks or toe warmers; headgear will need to cover all of the ears and a neck-warmer is essential to fill any gaps between body and collar. Thicker, more thermal base layers also help, adding warmth without too much bulk.

## UPPER BODY

- Much of the winter advice will carry over, but look for jackets with more windproof fabrics, possibly up to 100 per cent as a cold tailwind chills quickly.
- Use a base layer with good wicking properties — even when it's cold outside, you can still work up a sweat. This will quickly cool you if it stays wet against the skin.
- The best thermal insulation will come in the form of air pockets, so layer up or opt for technical fabrics that have air channels replicating the effect without the bulk.
- Make sure the arms of a jacket or jersey is long enough when in a riding position to prevent gaps between cuff and glove opening up.

## LEGS

- A windproof and weather-resistant front, especially thigh and knee, can do wonders for preventing you from feeling icy cold a few hours into a ride.

- Make sure winter tights fit you just as well as your summer bibshorts. Choose tights that are warm, windproof and waterproof — but still stretchy enough not to sag, pull down or crease where they fold.
- Consider tights that don't have an integral chamois — they give you more flexibility to wear more (or less) underneath to help regulate body temperature.

## EXTRAS

- Make sure any headgear doesn't pinch if worn with a helmet.
- Breathing in cold air affects some more than others — using a simple face mask, buff or even a scarf will help keep out the worst of the cold air.
- Don't make the mistake of wearing too-thick socks for your shoes. It's important that you can still wiggle

your toes and allow air (and blood) to flow. Choose thin, warm ones instead, adding layers externally — oversocks under overshoes are worth considering.

- Gloves which are wind and waterproof will keep fingers warm — aim for a pair that don't have too much bulk on the palm to hinder bar grip.
- Silk glove liners are often the key to keeping hands warm — they will help insulate but will keep the bulk down. These low-cost items will add a season to any pair of gloves.
- Think about integration with other accessories; if your jacket has skin-tight cuffs, opt for a glove with a wider one to wear over it.

## Endura Equipe Softshell jacket £199.99

**Cycling WEEKLY**

**RECOMMENDED**

THIS is a top-end, feature-packed winter jacket developed with feedback from the Endura pro team. The looks are good in lime green, and close-fitting fabric with stretch gives a comfortable all-round fit with no loose, baggy bits. Features include reflective strips with stormproof hidden zips that match the style for an elite look.

I rode on a cold day with just a medium-weight base layer and was fine on the temperature front. Neat side vents open right up, so any overheating is immediately countered although it wasn't too easy to unzip while on the move.

This jacket shines with its fit, feel, design and fabric and at a shade under £200 is pretty good value when compared with similar top-end models. SR

9



## Endura Equipe Thermo Windshield bib-longs £129.99

**Cycling WEEKLY**

**RECOMMENDED**

MATCHING the jacket are the Equipe Thermo Windshield bib-longs, which are aimed at cold or wet-weather riding. The water-resistant Thermolite SuperRoubaix fabric was more than capable of keeping me warm on the coldest rides. Even in wet conditions it performed well with continuous front-wheel spray. Overall, quality is very good with seams overlapping for extra warmth where the fabrics meet. This is a top-end product that can rival the more premium brands at half the price. SR

9



### Castelli Ispirazione WS jacket £230

**Cycling WEEKLY**

**HIGHLY RECOMMENDED**

THERE are some things in life that you just want, and this jacket is one of them. To put it bluntly, I'm in love. The Ispirazione jacket is as close as you're going to get to haute couture bike clothing. It's made with two different types of Gore's Windstopper fabric, with four-way stretch X-Free to maintain fit on the front and arms, and ruffled Windstopper Plisse on the rear of the shoulders to give even more movement without ever appearing baggy. The overall design is head-turning, but with its texture and reflective chromed 'Castelli' lettering on the back, it isn't going to be to everyone's taste, but with practical roomy rear pockets it's hard to find fault. It's not cheap, but think of it as an investment, and with the amount you use it, the cost per wear makes it easier to swallow. HB **10**

### Castelli Corrente Wind tights £120

**Cycling WEEKLY**

**HIGHLY RECOMMENDED**

THIS garment has everything a pair of cold-weather tights needs: windproof, water resistant and thermal properties that keep you snug and warm. The front of the tights uses Castelli's new SG0.6 wind fabric, a sandwich-style material of windproof material and works on the basis of trapping air in the fibres to provide insulation. It's super-flexible, so the fit of the tights is perfect all round. Their well-fitted nature makes them comfortable all day long, and, as there's no upper bib to deal with, answering a call of nature is easy. Despite lacking a bib they don't fall down. Combined with a high, wide waist band, tight-zipping ankle grippers and a female-specific Kiss3 chamois, these tights can do no wrong. HB **10**

**Sealskinz Road Performance gloves £40**  
SUPER-WARM and super-bright, but they need pairing with plenty of sleeve length as they don't come with a cuff closure. HB **8**

### Exteondo Abaraska £129.99

**Cycling WEEKLY**

**RECOMMENDED**

WE thought this was a brilliant, super-warm jacket, ideal for a crisp and freezing winter's ride. The Windstopper and water-resistant top was a really good fit, with the snug neck fit really standing out. We were also really impressed with the length of the arms; we often find that a gap of an inch or so can open up between glove and cuff when stretched into some positions. It was noted these sleeves stayed firmly tucked into our gloves both on the hoods and drops. The jacket proved to be very snug during a chilly test thanks in part to the Thermolite soft lining and although only sporting one rear pocket, this was big enough to carry spares and food for the ride. Still, we like to organise our gear, so it drops a mark. JC/HB **9**



**Specialized Balaclava £24.99**  
SKINTIGHT, which keeps all bar the eyes covered up! Best reserved for extremely cold riding, but there's little better if it's truly Baltic. JC/HB **9**



### Gore Oxygen SO bibtights £124.99

WE really noticed that these tights made from Windstopper soft-shell fabric held their own in a cold day in the snow-capped mountains, keeping us warm even on extended descents. Our version of the Oxygen SO tights was without chamois. If you prefer to go integrated, you can get the Bibtight+ version with an Ozon Pad for £149.99. The flat-lock seams were all well finished, even on the zip, so there wasn't ever any risk of uncomfortable friction rubs. As for garment sizing, we found the Oxygen SO tights fitted our taller tester best, which is worth mentioning as the foot loops mean that the leg length really does have to be right. Without the height, shorter testers suffered from behind-the-knee bunching. JC/HB **8**

### Giordana FR\_C Body Clone Full Revolution jacket £199.99

**Cycling WEEKLY**

**HIGHLY RECOMMENDED**

AT first glance this jacket doesn't seem anywhere near thick enough for cold conditions. It's a great example of the wonders of modern fabric technology. The inner face is made up of brushed polypropylene — one of the most effective wicking materials. As it stays very dry, the air spaces can be made smaller, reducing the required resilience. Bond a super-stretchy Windtex membrane internally and face it with a high-density material and you end up with some serious weather-beating, in a tiny space. The fact it's put together using the Body Clone system means the fit is the best in this test. Deep SuperRoubaix cuffs and collar keep every draught out and the gripper hem panel is superb. Expensive yes, but the performance is off the scale. NW **10**



**Vanguard Windflex roll-neck base layer £69.99**  
PREVIOUS experience has proven how versatile, reliable and great performing Vanguard's base layers are. Simply perfect. NW **10**

### Rapha Deep Winter tights £200

RAPHA'S Deep Winter tights use a hollow fibre-backed, ThermoRoubaix fabric, so they are certainly warm, but the extra protection comes in the form of some seriously weatherproof panels down the full length of the leg fronts. The reduced stretch means you need to pay more attention to fit as they'll pull down the leg unless the thigh fit is good. A sturdier fabric on the bib may help a little in this regard. Designed to be worn with shorts underneath, they come padless and this makes us think hard about the pricing. The performance of the materials is good, but we are knocking a mark off for value. NW **8**

### Pearl Izumi P.R.O. Prima jacket £120

BEING bright white, you'll need to choose the right day to wear this jacket. We suggest a crisp and dry, frozen morning, as one thing's for sure — this jacket did an amazing job of keeping me toasty warm, even when the men were moaning about feeling cold! It's not the most practical choice, though; there's only one token pocket big enough for a phone on the inside — so you'll need a saddle pack or a mid layer with pockets. To be honest, this is a jacket designed to look good in rather than for hammering out the miles, so its value for money will be a personal choice, but feeling stylish and staying warm riding down the snow-capped mountains in Italy made it worth every penny for us! HB **7**



**Shimano RW80 winter road boot £149.99**  
THEY may be heavier than standard shoes and booties, but nothing comes as close to keeping your feet as warm. Suffer from cold feet? Buy some. **9**

### Assos LL607 tights £199.99

**Cycling WEEKLY**

**RECOMMENDED**

WITHOUT a doubt, these tights certainly conform to Assos's legendary quality. Constructed from 14 panels, six fabrics and 15 components, these are probably the most technically constructed garment we had on test. The majority of the fabric used in construction is a slightly tweaked RX fabric, a robust warm and soft material. Assos combines this with a new RXQ fabric, which works on the basis of trapping air in channels to provide insulation. Being Assos, the fit is excellent and the fact that they have no chamois makes them pretty versatile; wear with a pair of thermal shorts for even more sub-zero fortification. Our only whinge is the over-the-head bibtight braces closure. Although super-comfy when riding, it will require removing all your upper-body layers, including your helmet, a significant shortfall. HB **9**

### Louis Garneau Massimo 2 £139.99

WE found a bit of a gem in this toasty, breathable, water-proof and good-looking jacket. We were definitely warm enough on a steady ride in temperatures just above zero thanks to the HeatMaxx fabric, which retained warmth and worked well with the WindDry 12K internal stretch membrane that's wind and water resistant. The combination of fabrics means the jacket was sufficiently breathable when we had to press hard on the pedals and the low overall weight added to its benefits. Like the matching tights, the cut suited our longer torsoed tester best as it tended to scrunch up at the front when in a tucked position on the shorter riders. JC/HB **8**



### Louis Garneau Massimo Airtel bibtights £139.99

THESE are worth their weight in gold when battling a rather fresh wind on a long descent. Being fully windproof and heat retaining, thanks to a three-fabric mix in all the obvious areas, they sport a 'mesh' waffle-like inner liner which helped keep the inner face dry, ensuring warmth. The multi-panel construction fits the contours of the legs nicely and the ankle zip contributed to a good fit. That said, they fitted longer-legged riders better and thanks to the integrated chamois you'll need a good fit for the padding to stay put. A good value garment given its rather complicated construction. JC/HB **8**

### Mavic Vision Jacket £100

**Cycling WEEKLY** THIS is a high-visibility technical soft shell jacket designed for serious winter riding and made from a combination of Mavic's Dura Rain and Air Mesh. With plenty of reflective bands, it's highly reflective and gets our vote for a busy winter commute or dark-lanes training. It has all the features you'd expect from Mavic including a lower back long enough to give good coverage along with a Neoprene cuff giving a superb weatherproof seal that lets a glove comfortably sit over with no risk of the elements getting up your sleeve. Zip and mesh pockets combine well to complement a very practical, cost-effective winter jacket. SR **9**



### Craft Performance Storm bibtights £108

**Cycling WEEKLY** THESE are well-crafted performance bibtights for cold weather. The Craft brand was used by Leopard-Trek, so it clearly aims high with quality filtering through the range. Construction here uses a windproof elastic panel coupled with brushed fleece to combine elasticity, comfort and warmth. Craft's three-layer welded, seamless Performance chamois is also well-matched within the package. Soft and flexible polyester fabrics provide fantastic ease of movement and the reflective piping and decals in key areas add an element of low-light visibility. Fit was exceptional, feeling nice and tight where it was needed. SR **10**



### 2 Brynje SuperThermo shirt with wind cover £49.00

**Cycling WEEKLY** STAYING super-warm in this string vest-like base layer on a long descent from a snow-covered mountain was a testament to its effectiveness. The Super Thermo polypropylene fabric keeps the moisture away from the skin well and draws on the super-insulating abilities of air to keep warmth in. The added windproof layer on the front gave even more protection to our cosy torso. HB **10**

### 3 Columbia Baselayer Midweight long-sleeve top £45.00

**Cycling WEEKLY** THIS polyester base layer has an Omni-Heat thermal lining which is super-warm going downhill as the reflective dots on the inside act as a space blanket. Going uphill, its Omni-Wick fabric stopped our tester drowning in their own sweat. It's not bike specific, so the fit wasn't perfect, but its heat-trapping abilities were ace. HB **9**

### 1 Assos iJ.bonKa.6 jacket £348.49

THERE'S no getting away from it, £350 is a lot of money for a single item. The bonKa replaces a long-standing favourite extreme condition jacket, the FuguShell, and has a lot to live up to. The Airblock fabric has been replaced by the latest strataGonUltra airBlock type. Far thinner and stretchier, it uses a layer of fine-brushed fabric with a waffle-like construction. When stretched it seems translucent and it's hard to believe it can stay warm and windproof, but it does. Performance wise, it's as good, but no better than, the Giordana FR\_C jacket; if anything, the fit isn't as perfect despite the huge number of pieces of fabric that make it up. That said, it's not baggy, and we suffered zero cold spots on long descents, even with moist base layers. The popped collar flap also stays in place without a stiff zip pull in the Adam's apple. It'll last for years, and you'll know if that represents value to you. NW **8**

### 4 Brynje SuperThermo Loose Neck £20.00

MADE from the same polypropylene mesh as the excellent base layer, this neck warmer uses a tighter-woven double layer to reduce the through-flow of wind on the roll-neck section. If you don't like anything over your mouth, need a collar gap closing and ride when it's cold, this Brynje collar is superb. The whole thing stays super dry too. NW **8**

### 5 Northwave Arctic Woman Long Protective gloves £37.50

**Cycling WEEKLY** MADE from Thinsulate, a water and windproof insulating membrane, these have minimal palm padding, so don't hamper grip. Ideal for an icy-cold mountain descent. HB **10**

#### Base layers



BBB Thermolayer £27.99

Nalini Trail £43.99

#### Gloves



Santini Extreme Breeze £54.99

dhb Extreme Winter £29.99

#### Overshoes



Craft Rain Bike Bootie £36.99

Northwave Blade £24.50

#### Headwear



Craft Zero Windstopper Skull Cap £16.00

Castelli Risvolto Winter Cap £30.00

# Gore factory technical testing

**YOU CAN'T MAKE** top-of-the-range technical clothing without some very technical testing, we found out at Gore's scientific HQ

**W**.L. Gore and Associates is a company in an enviable position. Not only does it have its own well established range of performance cycling garments — Gore Bikewear — using its exclusive Gore fabric technologies, it also has the luxury of many other leading brands effectively eating out of its hands too, such is the high demand for its wares. It seems like an unusually rare win-win situation, as we can't think of many other industries where this is the case.

But in order to remain in the driving seat Gore can't rest on its laurels. Developing new fabric technologies, within its Gore-Tex and Gore Windstopper staples, is a focal point of its business, and to achieve that, rigorous testing is paramount. Today cyclists are spoiled with modern textiles that offer a level of performance and protection that would have been beyond comprehension for riders not so many years ago. But have you ever pondered what's involved in developing and rubber-stamping fabrics long before a garment makes it onto the hanger in a shop?

## Testing

We were privileged, and ultimately pretty blown away with what we saw visiting Gore's test facility in southern Germany. Let's face it, the Germans have a pretty concrete reputation for being fastidious in their attention to detail. Here Gore carries out a battery of specific fabric tests to determine their performance and ultimately decide whether they ever make it into finished garments. Gore's two distinct fabric lines are Gore-Tex and Gore Windstopper. It's important firstly to differentiate between them, as it's common for people to misinterpret the Gore logo. Gore is

the company, not the fabric. Gore-Tex is its guaranteed waterproof fabric, with a high degree of breathability. Gore Windstopper's priority is keeping a biting wind at bay, with maximum breathability, thermal properties and also offering a level of water repellence — not waterproofing.

In order to assess the specific attributes of these fabrics the test lab has some pretty sophisticated equipment. It's kind of a room for tech geeks, but it's hard not to be impressed. Suffice to say you can be pretty sure Gore is not about to tarnish its reputation by putting out any false claims about what its fabrics are, and are not, capable of. How is that so? By leaving no stone unturned. Rest assured, from what we've seen, every fabric is really put through its paces. Many of the tests are industry standards, such as those for colour fastness, pilling, abrasion, breathability and waterproofing, but that's not the interesting stuff. What we really wanted to get a look at, and let you in on too, were its quite unique environmental testing chambers.

## Rain tower

When you think about someone testing a waterproof fabric or garment, it conjures images of someone being blasted by a hosepipe. Well in reality, you wouldn't be so far from the truth, only Gore's rain chamber is a hi-tech way of achieving this. In what looks like a giant glass elevator shaft, it has the capability to replicate true-life rainfall scenarios, in terms of the precise force and spread of water, by using carefully located jets at specified heights. We were masochistically quite excited about getting go inside ourselves but that responsibility falls to specially developed mannequins to go in for the drenching. The tests are highly controlled and repeatable, so the performance of the various fabrics can

be carefully monitored. On another level, developed mainly for motorcycle garments, but also highly useful for the cycling line, the mannequins can be positioned on a bike and the chamber can simulate driving rain, such as what might be experienced descending at speeds up to 80kph.

## Wind chill chamber

Next to the rain tower is another glass cube. It's refrigerated down to around 0°C and at one end is a huge fan. You get where this is going right? The good news was this time we were allowed to send in a willing volunteer. Out with the mannequin and in with Stu, kitted out in Gore's latest Windstopper Active Shell jacket. Wind speeds were ramped



CW's dummy in the storm cube



Testing, testing...



Terrifying Gore-bot



Rain mannequin

## Gore facts — Gore-Tex & Gore Windstopper

GORE-TEX, invented by W.L. Gore and Associates, is an expanded PTFE (polytetrafluoroethylene) membrane with 1.4 billion pores per cm<sup>2</sup>, which means each pore is 20,000 times smaller than a water droplet. This fact makes it completely waterproof as the tiny holes are too small for the water to pass through, yet when water is given off by the body it's given off as a vapour, the vapour molecules are much smaller so they are

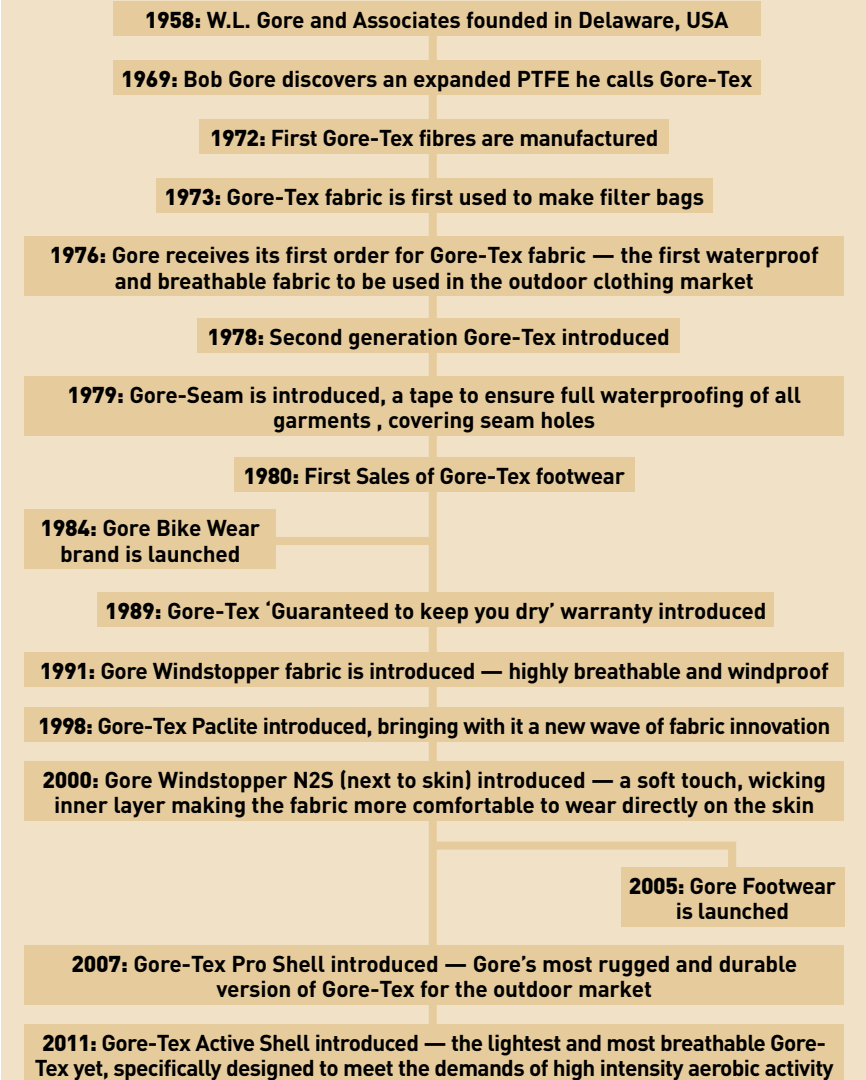
able to pass through the fabric to keep you dry on the inside. To guarantee waterproofing, the seams must be sealed and Gore is fastidious about compliance by manufacturers which use its fabric. Windstopper fabrics also use an ultra-light inner membrane, but this time it's expanded further and given one less treatment so that it's not waterproof,

merely water resistant — an important distinction. Thanks to these differences its much more breathable and yet still offers complete wind resistance.

**"To guarantee waterproofing, the seams of Gore-Tex must be sealed"**

The rules Gore imposes upon its use by clothing manufacturers are somewhat more relaxed; only 70 per cent or more of the garment needs be Windstopper and seams don't have to be taped.

## The W.L. Gore history tree



Keeps warmth in, breeze out



# Contacts

<b>Altura</b>	<a href="http://www.zyro.co.uk">www.zyro.co.uk</a>
<b>Assos</b>	<a href="http://www.yellow-limited.com">www.yellow-limited.com</a>
<b>BBB</b>	<a href="http://www.windwave.co.uk">www.windwave.co.uk</a>
<b>Bontrager</b>	<a href="http://www.bontrager.com">www.bontrager.com</a>
<b>Brynje</b>	<a href="http://www.nordiclifecycling.com">www.nordiclifecycling.com</a>
<b>Btwin</b>	<a href="http://www.decathlon.com">www.decathlon.com</a>
<b>Campagnolo</b>	<a href="http://www.i-ride.co.uk">www.i-ride.co.uk</a>
<b>Castelli</b>	<a href="http://www.saddleback.co.uk">www.saddleback.co.uk</a>
<b>Columbia</b>	<a href="http://www.canoeinc.co.uk">www.canoeinc.co.uk</a>
<b>Craft</b>	<a href="http://www.unitedbrands.com">www.unitedbrands.com</a>
<b>dhb</b>	<a href="http://www.wiggle.co.uk">www.wiggle.co.uk</a>
<b>Endura</b>	<a href="http://www.endura.co.uk">www.endura.co.uk</a>
<b>exte ondo</b>	<a href="http://www.prendas.co.uk">www.prendas.co.uk</a>
<b>Force GB</b>	<a href="http://www.forcegb.com">www.forcegb.com</a>
<b>Giordana</b>	<a href="http://www.yellow-limited.com">www.yellow-limited.com</a>
<b>Giro</b>	<a href="http://www.madison.co.uk">www.madison.co.uk</a>
<b>Gore Bike Wear</b>	<a href="http://www.gorebikewear.com">www.gorebikewear.com</a>
<b>Hirzl</b>	<a href="http://www.nemisigb.com">www.nemisigb.com</a>
<b>Le Col</b>	<a href="http://www.lecol.net">www.lecol.net</a>
<b>LG</b>	<a href="http://www.evanscycles.com">www.evanscycles.com</a>
<b>Lusso</b>	<a href="http://www.lusso-clothing.co.uk">www.lusso-clothing.co.uk</a>
<b>Mavic</b>	<a href="http://www.mavic.com">www.mavic.com</a>
<b>Moa</b>	<a href="http://www.raleigh.co.uk">www.raleigh.co.uk</a>
<b>Nalini</b>	<a href="http://www.chickencycles.co.uk">www.chickencycles.co.uk</a>
<b>Nike</b>	<a href="http://www.nike.com">www.nike.com</a>
<b>Northwave</b>	<a href="http://www.i-ride.co.uk">www.i-ride.co.uk</a>
<b>One Ten</b>	<a href="http://www.hotlines-uk.com">www.hotlines-uk.com</a>
<b>Pearl Izumi</b>	<a href="http://www.madison.co.uk">www.madison.co.uk</a>
<b>Polaris</b>	<a href="http://www.polaris-apparel.co.uk">www.polaris-apparel.co.uk</a>
<b>Prendas</b>	<a href="http://www.prendas.co.uk">www.prendas.co.uk</a>
<b>Pro</b>	<a href="http://www.madison.co.uk">www.madison.co.uk</a>
<b>Rapha</b>	<a href="http://www.rapha.cc">www.rapha.cc</a>
<b>Santini</b>	<a href="http://www.fisheroutdoor.co.uk">www.fisheroutdoor.co.uk</a>
<b>Seal Skinz</b>	<a href="http://www.canoeinc.co.uk">www.canoeinc.co.uk</a>
<b>Shimano</b>	<a href="http://www.madison.co.uk">www.madison.co.uk</a>
<b>Specialized</b>	<a href="http://www.specialized.com">www.specialized.com</a>
<b>Sportful</b>	<a href="http://www.c3products.com">www.c3products.com</a>
<b>Swrve</b>	<a href="http://www.swrve.co.uk">www.swrve.co.uk</a>
<b>Vanguard</b>	<a href="http://www.todaycyclist.co.uk">www.todaycyclist.co.uk</a>
<b>Velobici</b>	<a href="http://www.velobici.cc">www.velobici.cc</a>

