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Ten years ago nobody knew what softshells were: there weren't any. Today they are there, but most consumers still don't know what they really are – mind you, many within the outdoor industry actually don't know or don't bother either. The question of how waterproof a softshell may be is now changing the whole concept.

Hard facts on softshells

During the 2002 OutDoor Trade Show's Functional Forum on softshells the presenter introduced the subject by saying, "To define what softshells are is really difficult, but it's easy to say what they aren't: they are not hardshells." That seemed obvious and nobody contradicted.

All the panel members at the time hoped for good business in the near future. The new softshell category was supposed to counterbalance sales losses, especially those from the hardshell category. But softshells were equally meant to address new customers, since most people going outdoors weren't out in the countryside or the mountains for weeks and weeks but for much shorter periods. Nobody really wanted to dress up in hard wearing extreme clothing that could withstand a natural disaster just for a weekend out hill walking, climbing, canoeing or cycling.

The main idea behind the softshell concept was not to have alternatives for technically overdressed leisure time hikers. Rather, softshell was the surge for more suitable technical equipment for mountain pros and extreme activists who increasingly condemned the lack of breathability of the hardshell-driven approach to the layering system. To keep it simple, the outer layer of the three-layer system did not breathe sufficiently and could not ventilate through the fabric, thus leaving the user getting soaked from the inside due to perspiration and condensing water vapour as well as from the outside. Patagonia's famous statement saying that it is not the storm outside the jacket that matters but the storm inside the jacket that limits activity, was the starting point and the point to keep in mind.

The presenter's quote on softshells not being hardshells is precisely the point of today's discussions. Just how hard may softshells be, if they still want to claim to be softshells?

Softshell basics

Softshell does seem to be a very ambiguous issue. At least its nature is highly contradictory regarding definition, and the term softshell has become a very vague catch-all phrase in the market place. Interestingly enough, there is a view about the functional basics to which a softshell should comply and the opinions among the majors in the softshell industry all sound alike.



External shell taping on this Lifa jacket from Helly Hansen invites attention and turns away weather.

Helly Hansen

Swiss Schoeller Textiles, one of the pioneers of softshell fabric development, states it clearly: "Comfort and air permeability in combination with good weather protection are primary functions of a softshell. That's why this trend developed." Malden Mills, another pioneer, sees it similarly: "The balance of breathability and weather protection is what made softshells compelling to guides and extreme athletes in the first place." And Nextec, also one of the panel participants from 2002, sees primary functions in "superior comfort with long lasting barrier protection" as the company's senior global marketing manager Susan Kohut puts it.

Kenny Gotcher, at Toray, adopts a more technical view of what is the principal function: "Primary would be stretch and some kind of layered construction, whether it be bonded or doubleweave."

In general, the industry shares these opinions. Millet's marketing manager Michel Paccalet speaks for mountaineering companies and names high breathability, water resistance and moisture management as primary functions.

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Salewa softshell garments are designed to keep the wearer warm, dry and comfortable during intense aerobic activity.

Salewa

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Nevertheless, Paccalet is aware that there is a difference between the theoretical softshell definition and acceptance in the market. And this is exactly why softshell is such a difficult and, from some people's point of view, problematical term to use. Paccalet sees two major flaws. First, market acceptance of functional apparel is still connected to the term 'hard' and second, "real high performance softshells clearly differ from what the fashion market sometimes declares as a softshell."

What's really meant by soft vs. hard?

The dichotomy between softshell and hardshell has nothing to do with one being soft and comfortable and the other hard and rugged. The term softshell was created back in 1999 to characterise a new group of fabrics that were intended to be used either as an outer- or mid-layer depending on weather conditions. To distinguish these softshells from the classic outer-layer, the latter was then called hardshell. SNEWS actually was the first to refer to softshell and hardshell in its February 1999 edition — "perhaps the most intriguing outerwear story of the Show was that of 'hard shell' versus 'soft shell'".

In 1999, the new generation of fabrics was described as "more breathable than any hard shell system, but offering enough weather protection for all but the most inclement situations". On top of that, most of the softshell garments function as mid-layer pieces in nasty conditions, and they perform as outerwear for the rest of the time. The fabrics themselves were mostly woven or knitted and to a lesser extent nonwoven, but none of these had an integrated film or a membrane.

The prefix 'soft' meant highly breathable and weather repellent whereas 'hard' only meant waterproof and windproof. Both categories could be comfortable (soft) or abrasion resistant (hard), compressible and lightweight. The only distinction was how the fabric coped with prolonged rain. Hardshells kept the water outside no matter how heavy or how long the downpour. Softshells could shed water for a short period of time, but had no waterproof performance.

But even Patagonia, together with ArcTeryx, softshell pioneers in the outdoor industry, only explained the difference between soft- and hardshell in its autumn/winter 2001 catalogue. Up to that point Patagonia categorised waterproof apparel as 'Storm' and weather protection apparel as 'Vario' or 'Pneumatic' depending on the level of wicking and insulating performance.

Meanwhile, the meaning behind the word has changed. Soft is used for soft and smooth fabrics, meaning fabrics with a textile face, some kind of gauze or pile on the inside and high levels of elasticity that allow a snug and comfortable fit. But the term is vague and nearly every manufacturer calls one of his fabrics softshell – even if it has hardshell properties. And it's this that makes the softshells so difficult for consumers to understand. The term softshell has been isolated from its former conceptual meaning.



The Mammut Laser jacket employs stretchy and warm weather repelling Schoeller Dryskin Extreme with Nanosphere treatment.

Mammut

Changing perspective of a concept

Back in the beginning, the term softshell was not used to create a new category, but to distinguish a specific new concept among the existing concepts. Today if one talks about softshells, one has to talk about the specific properties to understand the performance of every single softshell. And since there is an almost infinite number of fabrics on the market, it's hardly possible to register and comprehend its use.

A consumer who is looking for a fleece wants warmth, somebody looking for functional base-layers wants wicking and something that prevents chill. An outershell is there to withstand the vagaries of the weather. Even the matching term hardshell has a clear functional background. Hardshells protect from rain. But what do softshells do? To answer this question one has to differentiate between three phases and ideas in the development of softshells that make today's dilemma clear – because they all continue to exist.

Phase one begins with the initial idea of softshells. There was a clear unified concept: softshells were about quickly moving wetness from the inside to the outside and allowing a

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certain amount of air ventilation through the fabric, enough to support breathability, but not enough to create a problem with wind chill. The fabrics involved were weaves, double weaves and bonded nonwovens from Polartec, Schoeller Textiles and Nextec's Epic. There were even some light two-layered combinations of a thermal and wicking lining and a Pertex shell. The products were designed as mid-layer apparel and could be worn in good conditions as the outer shell and as a mid-layer under a hardshell jacket. Technically this made sense.

The second phase followed with the first windproof membrane softshell jackets in autumn/winter 2002/03 with W.L. Gore entering the softshell market. Already this meant a step away from the initial concept because windproof jackets always favour body protection as the opposite of maximum breathability. Because of this, windproof softshells were already arousing controversial debate. On the technical point, critics argued that they were nothing new as windproof fleece fabrics had already existed from the early 1990s. On the other hand, Gore voiced its opposing opinion stating that the Windstopper Softshells, as they were called, were indeed different. They had a hard face outer fabric and a lot more stretch than former Windstopper products. And, of course, the company had no problem with changing the perspective of the softshell concept. From the technical point of view, however, these windproof softshells were no longer suited as layering products, because the combination of a membrane in the second layer and a membrane in the third layer would even further decrease the breathability of the system.

For 'original softshell' enthusiasts the third step meant a real setback. In winter 2004, Mountain Hardwear launched the first completely waterproof softshell – in its opinion a contradiction within itself, since softshells were 'invented' to overcome old waterproof-fixated thinking and enter a new dimension of breathability if one could only reach beyond waterproof membranes. And it became even worse. A year later, W.L.Gore launched Gore-Tex Softshell – which one would have to designate a 'hardshell-softshell', if that were possible – turning the initial concept on its head. Critics prefer calling these jackets 'soft hardshells' and complain that Gore used its marketing power to ruin the softshell concept for the sake of its hardshell's business. Others, like Columbia Titanium product merchandiser Armin Vollmer, see an evolutionary process within the softshell category. "Our Mighty High Softshell is based on the classical hardshell concept, but has comfort from softshell as to combine the optimum from both ideas," argues Vollmer.

Gore-Tex Softshells don't seem to find high market acceptance – after two years of sales, not many of Gore's Partners still feature these jackets, let alone have extended their product line. Regardless, the development has strongly contributed to confusing consumers about softshells and even the textile industry views softshells with hardshell functions as a contradiction: "Yes," says Malden Mills, "if it has a full film membrane and is completely windproof, then it's not a softshell – it can't breathe adequately to be in the softshell category." And competitor Schoeller agrees, "The initial softshell idea was to offer – compared to a hard shell – great air permeability, freedom of movement and softness. If – to call a product a softshell – the air permeability needs to be achieved by garment construction such as ventilation zippers, etc. then it is in our eyes a contradiction."



The North Face women's Photon Hybrid jacket.
The North Face

And even Toray, which was no pioneer and must be unbiased, acknowledges the initial concept. Sales executive Kenny Gotcher comments, "Still we do believe that a high function of softshell should be breathability and a large part of that should be air permeability which is not found in products that use membranes or films."

Fashion softshells – appearance and reality

Large parts of the outdoor industry have come to terms with the vague overall softshell concept and have found their own approach to tackling the problem and selling different softshells. Paccalet puts it very clearly: "It is very important that real high performance softshells clearly differ from what the fashion market sometimes declares as a softshell. A real softshell is and always was a high tech fabric, which offers all the performance a real outdoor freak seeks."

The differentiation between core users and fashion does make sense, because non-athletes don't need the high amount of breathabilitiy, while, at the same time, they need more protection due to less movement and less body heat that they produce.

But softshell's success goes well beyond the functional performance. They are especially liked because of the new look they brought to the market. Once more Paccalet: "So it seems that softshells in the fashion business are being used because of the technical look whereas softshells in the outdoor business are clearly

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being used because of the high performance the fabrics offer."

And even Polartec will admit that there is a market for non-technical softshells and that it is worthwhile meeting the demand. "There's definitely a market for this style garment and we have some Polartec Windbloc fabrics that meet this demand. This is not, in our opinion, a soft shell garment though." Nevertheless, Polartec will pursue this direction and develop Windbloc fabrics "that feel and look like softshell fabrics" for a broad market of low profile performance requirements.

Toray takes a more *laissez-faire* approach to the matter of who uses membranes and whether it is technically appropriate or not. "Toray leaves this designation up to the customer since they are the ones deciding what the end uses will be," says Gotcher, even though he too shares the observation that "more technical outwear companies are looking to have highly air permeable softshells with the obvious focus on breathability and not waterproofness."

Trends coming up

Hybrid is not only a term becoming more popular to reduce fuel costs or to cut carbon emissions in the automotive branch, but is generally gaining ground because of the possibility of combining the best of two ideas. Keen pushes it in footwear. In apparel, hybrid is the combination of hardshell and softshell fabrics in one product to improve overall performance. For instance, combining a waterproof laminate on the shoulders and the hood with an air permeable softshell fabric for freedom of movement and improved body climate, as seen in Mountain Hardwear's Manticore jacket. Schoeller Textiles considers this to be "a further development of the initial softshell idea" and confirms "this is, depending on application fields, a very good solution". To improve compatibility with soft-shells, Schoeller Textiles has developed a special smart Bionic Climate Membrane. Schoeller 'c-change' follows nature's example of a fir cone that opens when warm and shuts when cold. The flexible polymer structure of the elastic hydrophilic 'c-change' membrane reacts similarly to changing temperatures and activities, allowing more breathability when activity is high and giving more protection when it gets colder.



Columbia Crystal Palace sweater – Soft Shell front with wool-blend layer for warmth.

Columbia Sportswear

Toray too regards hybrids as a future technology and "the right way to go". Hybrids could even help them gain a larger slice of the softshell market, since Toray produces both waterproof fabrics as well as air permeable woven or bonded fabrics. This could result in a long-term advantage, because some textile companies and membrane developers show little restraint when it comes to allowing the industry to combine fabrics from different suppliers.

But hybrids don't necessarily only mean improving second and third layers. Columbia's Crystal Palace sweater combines the best of wool and softshell. It keeps the torso protected but offers higher breathability through arms and armpits. A similar idea is used by German ski-brand Schöffel: the 'Pro Therm Jacket' features Polartec WindPro for the front, back and elbows combined with Thermal Pro High-Loft on arms and side panels.

Hybrids are not only the latest functional state-of-the-art but should equally be seen as a reference for the broader fashion market. Softshell's success in the non-sport sector has to do with the new look. Hybrids can change perceptions of third-layer products and fleece for everyday use. That could be helpful because whether softshells have actually fundamentally extended the market or have just shifted sales from hardshells and fleece to softshells is debatable. One point is certain. The softshell buzz has made business more competitive.



An application of Toray's Primeflex fabric is Cloudveil's Inertia Peak Jacket.

Cloudveil