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The Best Storm Shell Rain Jackets

These shells all share a similar construction, with a waterproof and breathable membrane protected on the inside from body oil and dirt by a thin layer of fabric. In all but the Columbia Reversible there's also an abrasion resistant outer layer. The "protective layer-membrane-protective layer" construction is what gives this category a commonly used name: 3-layer shells. Though, that is changing. This style of jacket is considered the best for weather resistance, breathability and durability.

We tested the jackets during the fall and early winter in the Pacific Northwest rainforest, using them for a variety of activities to tease out how they perform. Our team of testers consists of mountain guides, sea kayakers, mountain bikers and trail runners. They used them in everything from warm and sunny to cold and rainy weather.

The utility of this category of jackets continues to expand from expedition worthy to a legitimate storm shell for any activity outdoors thanks to continued improvements in cutting weight and increasing breathability without compromising waterproofness or durability.

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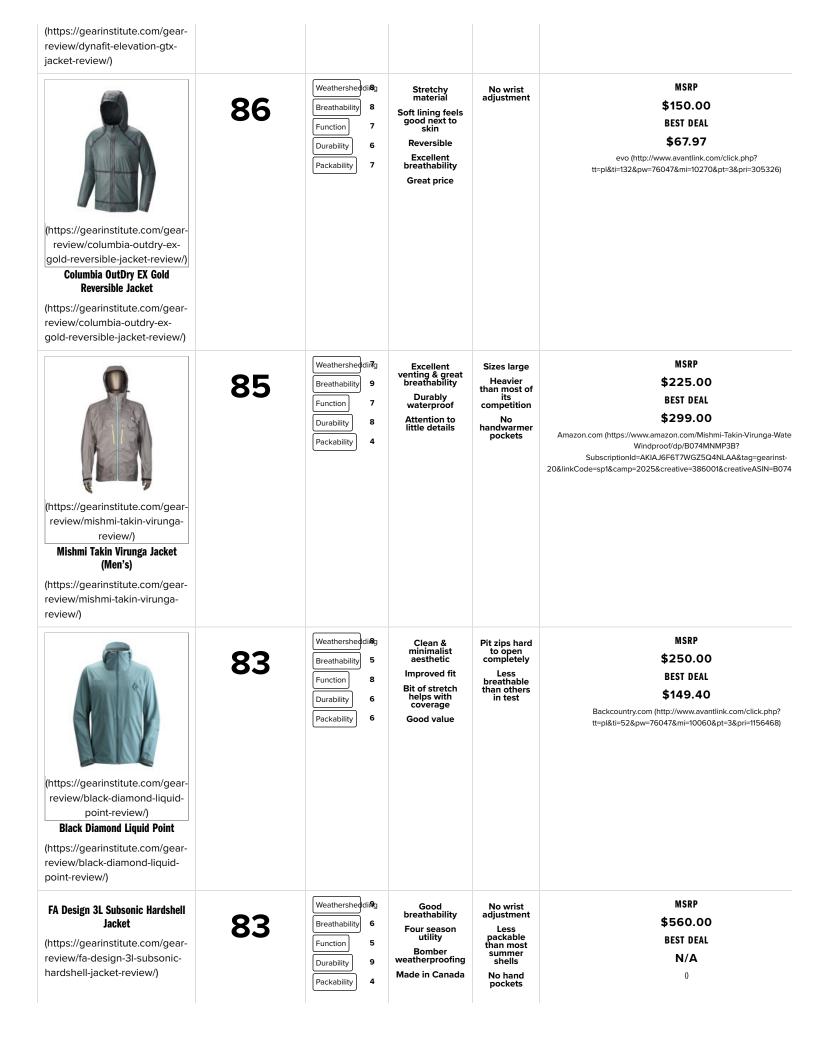
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The lightest shell in this test, the Dynafit Elevation GTX Jacket eliminated waist, hood, and wrist adjustment to cut weight but kept all the protection we'd expect from a three-layer shell. With a soft liner, quiet fabric, and excellent breathability it's a great choice for high speed, low-weight adventures.

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86

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The Columbia OutDry EX Gold Reversible is the most versatile jacket in the test and the best value. The Reversible is two jackets in one: a bomber shell on one side and a waterproof soft shell that will blend in urban locales on the other. Techy or not, few jackets perform as well and have your back in so many different situations.

Read the Full Review (https://gearinstitute.com/gear-review/columbia-outdry-ex-gold-reversible-jacket-review/)

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As a jacket designed with temperature regulation in mind, the Mishmi Takin Virunga dumps heat and sweat vapor more et deflecting water. However, it is heavier than most in this test set and the fit wasn't great on everyone.

 $Shop\ Now\ at\ Amazon.com\ (https://www.amazon.com/Mishmi-Takin-Virunga-Waterproof-Windproof/dp/B074MNMP3B?Single-Waterproof-Windproof$

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83

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The FA Design 3L Subsonic Hardshell is a double duty jacket that is slightly heavier than most summer jackets and slightly less protective than some ski shells. With careful layering, the few ounces difference on this jacket makes it a great value for a multi-season jacket. Designed by an ex-Canadian national team snowboarder, this highly versatile jacket is made in Canada and comes with all the quality and attention to detail we expect from North American manufacturing.

Read the Full Review (https://gearinstitute.com/gear-review/fa-design-3l-subsonic-hardshell-jacket-review/)

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BEST FOR: BOMBER PROTECTION Black Diamond Liquid Point

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As expected from Black Diamond, the redesigned Liquid Point is an attractive and clean cut jacket with plenty of performance. It handled heavy rains with aplomb, but proved to be a bit sweaty on uphill approaches. As shell weights continue to plunge, this one seems a bit heavy, but has all the features we like to see in a shell. It may not break new groubut it's a solid choice at a good price.

Shop Now at Backcountry.com (http://www.avantlink.com/click.php?tt=pl&ti=52&pw=76047&mi=10060&pt=3&pri=115646

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What Is A Storm Shell Waterproof Jacket?

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Review Results

by: Ryan Stuart (https://gearinstitute.com/our-experts/ryan-stuart/)

Last Updated: November 20, 2017

Weathershedding

A storm shell's number one job is to deflect rain, snow, sleet, hail and wind. With three layer shells the expectation is that this job could mean the difference between life and death in particularly foul weather, so we expect them to deliver for days on end. All the jackets in this year's test proved to be highly weatherproof. That said, the FA Design 3L Subsonic Hardshell Jacket scored the highest marks thanks to a four-season design, huge hood and burlier fabric. Losing the exterior fabric on the Columbia Reversible jacket — the membrane is exposed — means there's no exterior fabric to wet out, a potential weight savings, especially as the jacket ages, when DWR coatings would normally wear out.



The weather protection promise on the inside of the Black Diamond Liquid Point Jacket.

Breathability

It's hard to measure how well a jacket breathes, how efficiently it releases excess heat and sweat vapor. Everything from humidity to sweat rate, outside temperature to effort, plays a role, along with jacket construction. Manufacturers use different measures to explain it, but none are real world compliant, so we go with feel. It's not scientific, but we can get a good idea by using all the jackets in similar circumstances. With a focus in this category on weather protection one might expect slightly lower breathability performance, but in most cases this was not true. The Mishmi Takin Virunga won this category thanks to its highly breathable eVent membrane combined with copious mechanical venting options. Lighter weight fabric helped the Dynafit Elevation GTX Jacket grab the silver. For the opposite reason, the worst breathability goes to the FA Design 3L Subsonic Hardshell Jacket. Its 40 Denier fabric was the burliest in the test, which impacted breathability.



Holes in the armpits of the Dyanfit Elevation GTX jacket up already excellent breathability.

Function

This category is where we account for all the little stuff: zippers, cinch straps, fit, stretch, hoods, wrist closure, etc. Basically, it's a measure of what a jacket is actually like to wear. In this category the Dyanfit Elevation GTX Jacket came out on top. Even though it is pretty minimalist, it has all the features we look for in a jacket and fit most of our testers really well. Columbia's OutDry EX Gold Reversible Jacket scored high mostly because it is reversible, two jackets in one. No jacket flunked this category but we did knock points off the FA Design 3L Subsonic because it had no wrist closures or hand pockets.



Instead of wrist closures or even bunnies the FA Design has sleeves. These are nice in the cold, but hot when it's mild out.

Durability

This is all about construction: the materials and how they are put together. The heavier the weight of the fabric, usually measured in denier, the more abuse the fabric can take. Then it's a matter of quality construction, the number of stitches, attention to detail, etc. Manufactured in Canada in a small factory with the heaviest fabric by far, the FA Design 3L Subsonic Jacket ruled this category. The Black Diamond Liquid Point and Dynafit Elevation GTX jackets scored lower because of their lighter weight, and thus less durable, materials. The Columbia Reversible jacket lacks an exterior fabric protection layer. We have concerns about its long term durability, but so far the jacket has stood up to heavy use and tough bushwhacking abuse.

Packability

Weight and bulk are the variables we factor into packability. They determine how easy it is to carry the jacket in a pack in terms of space and weight on the back or body. At a category leading 8 ounces, the Dynafit Elevation GTX comes out on top. The FA Design 3L Subsonic and Mishmi Takin Virunga were at the bottom. The Virunga because all the vents and zippers added bulk and the Subsonic because the burlier fabric is heavy and not as packable.

Review Conclusion

The top five storm shell waterproof jackets included a fast and light, a two-in-one, a four season worthy, one optimized for breathability and one that's reinventing the standard construction for this category. Thus, what stands out from this year's test is how varied and quickly changing this category is. As we've come to expect from this category, the first priority of these jackets is to be waterproof like your life depends on it, because it could. But from there things spread out quickly.

A few trends promise to mix things up even more, none more so than construction. The norm for this category has been three layer constructions: an external protective barrier, then the membrane, and then an internal protective barrier. Lately, a couple of companies have come up with two layer constructions, eliminating the outer protective layer by creating a membrane tough enough to stand on its own. One example is Gore's Active with Shakedry technology. Mostly used in high end aerobic jackets, ShakeDry is a super lightweight construction that brags awesome breathability, but is too fragile to be considered for this category. Columbia's OutDry EX is heavier and tougher. In our testing it performs on par with other three layer storm shells in durability, and is looking slightly better in waterproof and breathable testing. One fewer layer also means less weight, bulk and better breathability. We anticipate more brands and membrane makers will experiment with this construction technique and these new fabrics. We're excited to see where these new developments lead as other companies get on the track and the players already racing fight to maintain the lead they now enjoy.

Another new trend is comfort. Storm shells tend to be crinkly, stiff and clammy next to the skin. Building stretch into the fabric should help with noise reduction, allowing the jacket to move with the wearer, even for dynamic lunges, and adding a softer feel. Attempts in the past have often resulted in less durable and less waterproof jackets, but newer fabric iterations are much better. Notably, the Columbia OutDry EX Gold Reversible Jacket has tons of stretch and a soft interior. In this year's test, it was the most comfortable to wear. The Dyanfit Elevation GTX was not far behind. Its secret sauce is Gore's newish C-Knit construction, an almost fleecy inside layer of the 3-layer construction. It feels soft even when sweaty. We expect to see this trend to continue.

Both trends will only further diversify the category and may even create new ones. It's all good news for anyone who plays outside. Better shells are on the way.



When Columbia eliminated the outer protective layer on the Reversible jacket, it had to place the waterproof seam tapes on the exterior. They are the dark lines crossing through the waterproof zipper.

Test Methods

Over more than six months, a team of testers used the jackets in a variety of conditions and activities. They took the jackets hiking, canoeing, mountain biking, sea kayaking and rock climbing, pulling them out of their pack any time conditions warranted a shell. In addition we put the shells through a series of standard tests. We wore all the shells in an uphill run in 65 degree weather to test breathability, in a shower for 10 minutes to test weathershedding and on a bushwhack hike to test durability.

Throughout the real world testing, our testers recorded their observations on our five criteria: Weathershedding, the ability of the jacket to shrug off wind and rain; Breathability, how well the jacket released excess heat; Function, a catch all for features, fit and other factors that influence what it's like to wear the jacket; Durability, how well that jacket is made and how much abuse it can take; and Packability, the relative weight and bulk of the jacket.

What Is A Storm Shell Waterproof Jacket?

Gore gave birth to this category of jackets by accident. In 1969, Bob Gore, son of company founder WL Gore, decided to see what happened if he heated and then suddenly yanked rods of polytetrafluoroethylene, or PTFE. The rod stretched 800 percent to create a microporous structure. Seventy percent air, the holes in the extruded PTFE were too small for liquid water and wind to pass through, but large enough for water vapor and heat to slip out. Seven years later, Marmot made the first jacket using Gore-Tex. The standard construction technique has changed little since. Because oil and dirt clog the PTFE pores — which reduces breathability — and even light abrasion damages the fragile membrane, it is usually sandwiched between protective layers: One on the inside by a layer of fabric blocking dirt and oil and one on the outside as a shield to deflect dirt and abrasion.

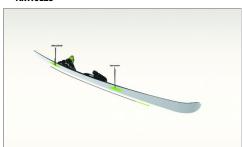
Today this remains the standard construction technique for storm shells, also known as three layer jackets. Though, as you'll see above, this is starting to shift. New developments in membrane technology are resulting in membranes that can stand on their own without a protective outer layer of nylon or other fabric. Ditching a layer makes the jackets lighter, less bulky and more breathable. Durability is the question mark, but waterproofness is as good if not better. We think this construction technique will spread. As it does, the definition of a storm shell may change.

For now, the take home is that performance continues to improve but the purpose of these jackets remains the same: create a protective cocoon that allows sweat and heat escape, so the wearer can work hard in comfort.

Lightweight versions with fewer pockets and other features are good for shorter trips at higher speeds, but require more care. The membranes often need more cleaning to keep them working well. Jackets with more durable fabrics stand up to abuse better: making them good for longer and rougher trips, and more extreme weather. And then there are all the variations in between. There is a storm shell built for just about every activity, need, interest and priority.

Since Gore's original patent expired, the technology it discovered is now widespread. That means almost every branded and proprietary three layer membrane works great. And it means brands are pushing R&D to make theirs better. For us lucky users it means we can head out into the worst conditions knowing we can trust our jacket to keep us drier, warmer and safer than ever.

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