

The ColdAvenger mask helps asthma sufferers and elite mountaineers breathe more easily in severe cold.

Scott Gilmour/ Talus Outdoor Technologies

A diverse range of sports and outdoor brands reserve at least part of their product development budgets for clothing and equipment especially designed to function in the most extreme environments on earth.

Extreme edge

It's common for companies to point to prototype testing they have carried out at the Poles or on high peaks and it's easy to understand why. If a jacket, a boot, a baselayer garment or a bag can withstand the snow and ice and the temperatures of minus-10°C of the Greenland winter, you can trust it to keep out the cold of Washington DC, the wind in Harbin, China, and the rain in Rome.

Frequently, though, companies in our industry produce things that are, genuinely, made to be worn in the most extreme environments, with the intrepid adventurers who work and play there the target audience.

Some of these products seem simple, including ColdAvenger, a balaclava-type mask made by US brand Talus Outdoor Technologies. The company's chief executive, Dr John Sullivan, says there are really two groups that the product is aimed at. One is asthma sufferers, who often find that extreme cold and dry air can trigger an attack. Dr Sullivan says that, as a doctor and a ski enthusiast, he is keenly aware of what extreme cold can do to the human body and has put all that knowledge into developing this product. As well as extensive head, ear and neck protection areas, with Lycra at the edges for comfort, the ColdAvenger also has a non-toxic, polyurethane ventilator with patent-pending technology built-in to wick moisture away from the face, humidify dry air coming in from the outside and raise the temperature next to the body by as much as 60°F (15.5°C). "The product moisturises the airways so you don't get that dry cough," Dr Sullivan explains. "That means that, as well as asthma sufferers, it's a good option for high-altitude mountaineers who prefer not to carry oxygen with them. And it's making a difference. I've had tons of emails about this and people on the phone crying because they can now enjoy the outdoors without being restricted by their asthma."

It's still a niche product, of course, but the Talus chief executive says this suits him better. Bigger companies have left him a gap, he feels, and he intends to make the most of it. But he also feels that enough people live in places that suffer extreme weather conditions each winter to make the ColdAvenger appeal to a wider public, at least for those communities. He continues: "I'm thinking of places like north-west Montana, where it can be 0°F (-18°C) for several weeks of the year. These are great conditions to go play in if you can stand the weather, so this can be a mass market product there. It's not such a niche product. But the big companies don't seem to have thought of that, or don't seem interested in it."



The CAMPack M4, a new rucksack from CAMP, offers fast and easy access to all compartments.
CAMP

Companies who are serious about catering for enthusiasts of the extreme include Italian outdoor equipment provider CAMP, which devotes research and development resources to updating everything from rucksacks to crampons. For 2011, the company has launched new versions of its C10 and C12 crampons. The main innovation in both versions is a quick and effective length adjustment system.

The same company is bringing the CAMPack M4 rucksack to market for 2011, aimed particularly at high-level mountaineers. Backdoor opening, a CAMP exclusive, gives much easier access to all compartments, which can be a big benefit in severe weather. And among the fixing straps built into the new product, there are some specifically for an ice-

axe. The M4 has a 40-litre capacity and weighs 90 grammes.

Aimed at helping outdoor enthusiasts cope with hazardous under-foot conditions, sole technology specialist Vibram has recently launched a system it calls IceTrek. Made from 100% rubber without any abrasive components, the compound was designed specifically for maximum grip over snowy or icy terrain in very cold environments. Users can travel and work safely in the mountains and coldest climates on earth, the Italian company says.

With its headquarters in Iceland, and its claim to have been keeping the country warm since 1926 incorporated into its strapline, outdoor brand 66° North has always had a healthy interest in extremes. Its new products for next year include the Vatnajökull soft shell jacket, made from Polartec's new water-resistant and breathable material, Power Shield Pro. The apparel brand describes the jacket as 99% windproof, with a small amount of air allowed to penetrate to provide better breathability and cooling, which you usually need during physically demanding outdoor activities, no matter where you are. At the same time, the jacket has a water column of 5,000 millimetres and is deliberately cut long to prevent the discomfort you can feel if the wind gets between your jacket and your trousers. making it ideal wear for work and play, even in the North Atlantic.



Dr Dale Andersen at the monument to Admiral Richard Byrd at the McMurdo Research Station in Antarctica at the start of his 2010 expedition.

Dr Dale Andersen

At the opposite end of the world, a trip that Dr Dale Andersen of the Carl Sagan Center for the Study of Life in the Universe, based at the SETI Institute in California, embarked on in October was certainly all about work, but also had elements of a labour of love about it. Dr Andersen departed for a three-month stint of diving in remote lakes below six metres of ice to reach a better understanding of how microbial life is able to exist in extreme environments on Earth. Along with his cameras and scientific gear, Dr Andersen took with him various garments from outdoor clothing brand Woolrich with a view to wearing and testing them on the polar plateau.



Icelandic outdoor brand 66° North has been battling the elements since 1926 and is still looking for new ways to do so, as the new Vatnajökull soft shell jacket proves.

66° North

Woolrich first supported polar exploration in 1939 when it outfitted US explorer Admiral Richard Byrd's third Antarctic expedition, which included extensive study of geology, biology, meteorology and exploration of the southern polar region. Dale Andersen is proud to follow in such famous footsteps.

"Maintaining personal comfort and warmth is always a challenge in the Antarctic and Woolrich has always been one of the best when it comes to making a shirt that can stand up to the elements," he said before setting off. He explained that he was first introduced to Woolrich in the Boy Scouts, where the Woolrich red Shirt Jac was part of the official uniform. Since then, he has regularly conducted research in the coldest regions of the world and has continually relied on wool to keep him comfortable and warm. For this latest expedition, Woolrich provided him with mid-layers, socks, headwear, and outerwear to use; he will provide feedback on all the products. Along with the iconic Buffalo Check Wool shirt, Dr Andersen tested the new Woolrich Lahar Vest and Zip-Neck merino wool mid-layers.

In spite of climate change, there are still plenty of extreme environments on earth, in which people continue to confront freezing temperatures, high winds, snow and ice. This article makes it clear that while some companies have been part of these battles against the elements for decades, the need remains for new ideas and new products specifically for these conditions.