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# Polartec Pioneers Synthetic Insulation Technology for U.S. Special Operations Forces Protective Combat Uniform

*Special clothing for special operations forces*



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**Year in Special Operations**



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A closeup of the PCU Level 3A Jacket showing the MultiCam® pattern. Polartec photo

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If you're an outdoor sports/adventure enthusiast or if you just like to wear warm, lightweight clothing during winter it's likely you've heard of [Polartec, LLC](#). Headquartered in Lawrence, Mass., the firm produces a large range of advanced performance textiles found in products of major commercial outdoor clothing manufacturers including [Patagonia](#), [The North Face](#), [Marmot](#), and more.

“However, most aren't aware that Polartec also designs and produces products for non-commercial users, including the U.S. military and foreign militaries. In fact the military has been a Polartec customer since 1998.

“Our entree' was originally with U.S. Special Forces [SF],” says David Costello, Polartec's Business Director. “We became aware that individual operators and units were buying apparel made with Polartec products from outdoor brands like Patagonia and The North Face. It seemed logical that if we focused our attention on developing products for militaries' particular needs we may have a market opportunity and enable them to better execute their mission.”

In the decade and a half since forming a relationship with SF, Polartec has expanded its military business,



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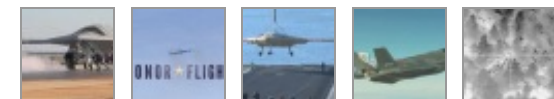
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**The SOF Protective Combat Uniform (PCU) Level 3A Jacket. Polartec photo**

designing and producing advanced fabrics found in a variety of U.S. Army, Air Force, Navy, Marine Corps and Coast Guard standard-issue clothing. The company has also worked closely with other U.S. government agencies.

Polartec's latest innovation is its new Alpha synthetic insulation technology, a fabric designed specifically for U.S. special operations forces. Announced in early January, Alpha is already in the field with special operations forces operators as part of the SOF Protective Combat Uniform (PCU) Level 3A Jacket. Produced in collaboration with Patagonia, the jacket can replace two to three layers of the SOF PCU.

"We produce what's called a 'high-loft fleece jacket' as part of SOCOM's protective combat uniform,"

Costello explains. "It's similar to some commercial products made by the North Face, Patagonia and others. They're very lightweight, very warm and compactible so that special forces personnel can easily pack them. But we started hearing that the personnel were not using them as they were designed. The product is a great thermal insulator but the SOF guys travel very fast and light and needed additional capabilities within a single garment that weren't present."

Existing fabric insulators excel at keeping people warm while at rest. But when a person becomes active, the wearer tends to overheat because the insulators do not breathe. This leads to the special operators donning and doffing jackets frequently. However, when wearing body armor and other equipment, removing the garments was not an option.

“We turned our R&D effort to developing a completely new type of insulation which is different because it’s a lofty, wide-open fabric based insulation as opposed to being a non-woven, batting-type insulation. That allows us to have great control over breathability, weight and compact-ability. It also makes the insulation very versatile.”

As mentioned, Polartec worked with Patagonia to craft the final garment but also works closely with military program offices including the U.S. Army’s [Natick Soldier Research, Development and Engineering Center](#) and the SOCOM specialists located there. SOCOM personnel did extensive field testing of the new PCU Level 3A Jacket as well as laboratory testing.

“The best testament is from the operators that field test the technology and go out and try to break it,” Costello reports. “They wouldn’t give it back. As a result, Special Forces made it part of their kit.”

Coming full circle, the Alpha technology developed for the new jacket will trickle down to commercial products going on sale this fall from a number of commercial outdoor clothing producers says David Costello.

“What’s neat about this is that most of the developments for military clothing have come from the business we do on the commercial outdoors clothing side. In this case, the Alpha was a pure military development but its versatility is such that it’s now getting picked up by the commercial outdoor brands. So we’re reversing the migration of the technology.”

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