FEATURE: PATAGONIA

Chemical Recycling
Making Fiber-to-Fiber Recycling a Reality for Polyester Textiles
Even among its peers of leading outdoor apparel brands, Patagonia is a rare company for its unique and often disruptive philosophy for doing business in the 21st century. It believes that a responsible company should also be an “activist” company. Patagonia became a Benefit Corporation in 2012 to legally codify its commitment to manage its business practices in a manner that benefits people and the planet.

“Patagonia exists to challenge conventional wisdom and present a new style of responsible enterprise. We believe the accepted model of capitalism that necessitates endless growth and deserves the blame for the destruction of nature must be displaced. Patagonia and its 2,000 employees have the means and the will to prove to the rest of the business world that doing the right thing makes for a good and profitable business.”

Patagonia is also the first apparel company to encourage customers to consume less of their products. In the words of the company’s founder, Yvon Chouinard, “We want to make the best clothes and make them so they will last a long, long time. Our idea is to make the best product so you can consume less and consume better. Every decision we make must include its impact on the environment”.

Patagonia has a lot of “first company ever” moments in its history. A partial selection of the company’s achievements:

- 1985 – Company pledges 1% of sales to international and domestic grassroots organizations for preservation and environmental restoration initiatives. By 2002, Yvon Chouinard and Craig Mathews founded the non-profit 1% For The Planet to encourage other businesses to do the same.
- 1989 – In collaboration with other leading outdoor brands, launched The Conservation Alliance, a nonprofit organization that engages businesses to fund and partner with environmental groups to protect wild places
- 1993 – First outdoor clothing manufacturer to make fleece from post-consumer recycled bottles
- 1996 – Committed to use organically grown cotton for all cotton products. Influences development of market for organic cotton
- 2005 – First outdoor apparel brand to launch chemical recycling program. Partner with TEIJIN Eco-Circle® to chemically recycle non-wearable Capilene® and fleece product lines
- 2008 – Partnered with Yulex to create wetsuits containing natural guayule rubber vs. petroleum-based neoprene (In 2016, switched to FSC-certified rubber from hevea plantations in Guatemala)
- 2009 – Founding member of the Sustainable Apparel Coalition
- 2012 – Became a Benefit Corporation as soon as legally allowed to do so in California
- 2013 – Launched Worn Wear program (formerly Common Threads Garment Recycling Program) to formalize its commitment to creating a circular economy for textiles
- 2016 – Launched “re\collection”, a new product line made from 100% recycled materials

Worn Wear

Worn Wear is a culmination of Patagonia’s experiences over the past 25 years to achieve their vision of a circular supply chain for textiles. Its mission is to realize the simple and wise (but mostly ignored in a consumption economy) maxim

---

1 Environmental + Social Initiatives 2016
of “reduce, reuse, recycle”. The Worn Wear program is built on a hierarchy of highest and best use and is designed to make it as easy as possible for customers to maximize the value of Patagonia’s products. It is a multi-tiered strategy that starts with

- Designing durable, high-quality, functional products with a long service life backed by the company’s “Ironclad Guarantee”.
- Helping customers to extend the life of their clothes through product care guides and “do it yourself” repair guides.
- Providing customers with incentives to trade-in used garments which Patagonia will renew and sell on the Worn Wear website or recycle at the highest level of quality possible.
- A guarantee to its customers that recyclable garments will never be landfilled or incinerated, or sold overseas in an uncontrolled environment.
- Keeping goods flowing in a system designed and controlled by Patagonia to ensure that highest and best use objectives are met.

What happens to Patagonia clothing that is returned?

After clothes are returned through various channels, they are re-distributed based on quality. Items that are still of new quality are returned to the sales floor or distribution system and those below that standard go through a hierarchical sorting process. Patagonia is one of the few apparel brands that owns and operates its own sorting processes – using Patagonia facilities and employees, giving it much more control in managing the fate of its products. Used clothes are sorted into “wearable” and “non-wearable” fractions. Wearable clothes are sorted and distributed to various channels including internal employee resale, donation to environmental non-profits, disaster relief efforts, and WornWear.com inventory; older and historical garments are put aside for the Patagonia Archives Collection. Wearable clothing that meets WornWear.com resale standards undergo further inspection, cleaned and permanently stamped as a Worn Wear garment. Similarly, other wearables that are donated are also stamped to signify that they have no return value, thus insulating Patagonia from potentially fraudulent returns. The non-wearable fraction is further sorted into those that can be used to teach people how to repair clothing and then be put back into service or those that have truly come to the end of their serviceable life and need to be recycled. Patagonia has been successful in its efforts to extend the service life of its products. Currently, garments processed for recycling amount to less than 1% by weight of a year’s worth of new garments produced. Nellie Cohen, Worn
Wear Program Manager explains that “We’ve never incentivized our recycling program with discounts on new products because that would be counter to our goal of fostering a society of owners, not consumers of products. Our recycling program is truly a last-resort waste management system. Whereas, our trade-in program is also trying to promote responsible consumption by helping people see the value of investing in a quality product by effectively creating a guaranteed buy-back price for well-cared for items. If we can encourage people to sell us their Patagonia gear they’re no longer using, we can get those items into the hands of people who might otherwise be purchasing less responsible and poorly made products that will need to be replaced more frequently.”

A different definition of recycling
Most apparel brands work through third party resellers like I:CO to manage their used clothing collection programs and to decide how non-wearable garments are to be recycled. Realizing that most of the used clothing that is recycled is exported out of the apparel value chain and often “downcycled” into lower value products, Patagonia has made a commitment to find strategies for “upcycling” worn out garments by keeping them in reuse cycles to make new products that will retain a higher retail value with a lower environmental impact because they are utilizing mostly local, handmade resources to create new products from old ones. As one Patagonia designer explains “… it’s about discovering the origin of a material and staying as true to that as possible…”

In 2014, the company launched its Truth to Materials collection to demonstrate how pre- and post-consumer materials can be reused to make new garments. Patagonia’s efforts to retain the embedded value of textiles as textiles has led them to partner with other manufacturers such as ReFleece, Alabama Chanin, Upcycle It Now, Enjoy Handplanes and Ecologic Designs to remake products.

The company has also been an early innovator in exploring more transformative recycling technologies, and continues to pursue the gold standard of recycling that can turn non-wearable garments into yarns to make first quality goods. In 2005, Patagonia collaborated with TEIJIN to explore how its chemical recycling process, Eco-Circle®, could help close the loop on its polyester garments like its Capilene® undergarment line. Chemical recycling allowed...
Patagonia to recycle a wider variety of discarded polyester products back into virgin quality yarns to make new clothing. This advanced form of recycling also allowed it to increase its use of recycled content across product lines with a diversity of fiber specifications. The company conducted its own life cycle analysis (“LCA”) to compare the environmental footprint of using chemical recycling to produce polyester fiber versus petroleum. Results indicated that TEIJIN’s process uses 76% less energy and emits 42% less carbon dioxide as compared to virgin polyester production.3

TEIJIN was the company’s first experiment with true fiber-to-fiber recycling. Patagonia continues its research to find advanced recycling technologies closer to home to reduce logistical complexities and environmental impacts of transporting materials to distant recycling facilities. GreenBlue worked with Patagonia to conduct chemical recycling trials with Loop Industries in its Montreal facility. Loop conducted trials on two different samples of materials: 1) a mix of different products made with varying amounts of polyester content and 2) a bale of sorted high content polyester garments. Both trials successfully depolymerized polyester, separating it from other fibers. An important outcome of the first trial was that Loop determined that the percentage content of polyester in textile feedstock needs to be 80% or greater to be recycled profitably. The second trial containing garments with much higher percentages of polyester confirmed this conclusion.

Patagonia’s commitment to use high percentages of recycled fibers in its products is helping to create stable markets for recycled fibers like polyester, and its continued research to find innovative technologies like chemical recycling is bringing the company closer to achieving its vision of making all of its products from 100% recycled materials, while also designing them to be 100% recyclable at the end of their first service life.3

---