

Fact Sheet: Sustainable Bio-Based Packaging

Numerous materials have emerged as viable alternatives to plastic packaging, protecting products equally well in transit while having many more sustainable attributes. While paper, with its high recyclability, is the most commonly used alternative, other bio-based alternatives exist, each with unique qualities and strengths that help replace various types of plastic packaging.



Mushroom

First designed in 2007 by Ecovative Design, mushroom packaging is increasingly being used as an alternative for polystyrene (styrofoam). Mushroom packaging is made from mycelium, the root network of fungi. Mycelium can be grown to function on its own as a foam, or it can be mixed with natural products, including hemp, oat hulls, and cotton burrs, to help the packaging take a desired shape. It grows around these products in a sealed environment in less than a week and fills whatever mold in which it is placed. Mycelium is an especially attractive material for packaging because it grows quickly, is inexpensive to cultivate, and is home compostable.

COMPANIES USING THIS ALTERNATIVE



Seaweed

Seaweed-based material is being used in place of plastic film wrap and plastic resin, and has been used to manufacture sachets for beverages and condiments, gift wrap, clothing tags, bags, and flexible packaging. It has also been used to line cardboard takeout boxes, making them fully biodegradable. After use, some seaweed-based products can be consumed, while others can be composted, dissolved in water, or biodegrade within months if landfilled. The largest obstacle to increasing the scale of seaweed packaging production is cost as it is more expensive to produce than plastic.

COMPANIES USING THIS ALTERNATIVE



Bamboo

Bamboo has recently surfaced as an alternative material to wood, paper, metal, and plastic. Known for its durability, bamboo is being used to create take-out food containers and utensils, packaging for cosmetics, and protective packaging trays for electronics. Most bamboo packaging is manufactured from the sheath, or the outer shell, that naturally falls off the bamboo plant. Since bamboo is one of the fastest growing plants in the world and does not have to be replanted after the sheath is harvested, bamboo is relatively inexpensive to cultivate. After use, bamboo products biodegrade within two to six months. Furthermore, bamboo growth benefits the environment as the plant transforms carbon dioxide into oxygen at a rate 35% higher than ordinary trees.

COMPANIES USING THIS ALTERNATIVE





Wool

Wool's ability to keep sheep cool is being harnessed by companies looking for ways to replace expanded polystyrene in packaging. Offcuts of sheep fleece that would normally be discarded are being used to create a unique packaging solution, which can thermoregulate food and pharmaceuticals in transport, and replace bubble wrap, bottles sleeves, and envelopes. While there is currently no infrastructure to recycle wool, it is biodegradable and compostable, offering a sustainable alternative to plastic.

COMPANIES USING THIS ALTERNATIVE







Pack Green Coalition is on a mission to replace unnecessary plastic currently in use within the global packaging and food service supply chains with more sustainable and environmentally-friendly options.

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