

BIODEGRADABLE AND COMPOSTABLE MATERIALS

“Biodegradable” and “compostable” claims are appearing on consumer products – from detergents and flowerpots to plastic bags and even textiles. But given the way we dispose of solid waste, it’s doubtful some of these will ever break down or decompose. As a result, many consumers are rightfully uncertain whether these items are really more sustainable.

Biodegradable means a material will break down or decompose through microbial action into basic elements found in nature. That is, they must be “eaten” by microbes, such as those found in soil, and the decomposition must occur relatively quickly. Many materials over time will degrade from sunlight, heat, moisture and mechanical stress, but this alone is not biodegradation.

Compostable means that a material will break down quickly in a typical composting operation into nutrient-rich, soil-conditioning mixture.

There are many standardized tests to confirm degradability. They involve simulating environmental conditions and measuring the extent of decomposition over a specified period of time. It is important that the conditions of the test represent the conditions of the typical disposal method. Unfortunately, the typical disposal method for most solid waste is not conducive to degradation. Modern landfills are more than just trash and dirt – they are lined to protect the surrounding soil and groundwater from contamination, and they are sealed to prevent the escape of potentially toxic byproducts. Landfill conditions typically lack oxygen and light, and may have insufficient microbes to break down anything. Even easily degradable items, such as banana peels and paper, are known to survive for years in landfills with minimal degradation. There are, however, some new landfill designs that promote decomposition at a controlled rate, capture gaseous byproducts such as methane for fuel, and safely treat other unwanted byproducts.

Some communities have industrial composting facilities: large-scale operations that make compost from agricultural

and food waste. Heat, humidity and regular mixing, quickly break down the waste. Although these are ideal conditions for products engineered to be biodegradable or compostable, many composting facilities will not accept these new products and strictly limit the types of waste they do accept to those that ensure consistent quality of their compost. There aren’t a lot of industrial composters, so some people compost at home. These backyard operations have less volume and generate less heat and humidity, so they may not actually be effective with items engineered to break down in industrial composting facilities.

Natural products are perceived to be inherently biodegradable, but this is not necessarily true. For example, leather is made by “tanning” animal skin into a durable product and will not easily break down. Cotton fiber is biodegradable, but a cotton shirt has other components that may not be. Sewing thread is often polyester or cotton wrapped around a polyester core, and buttons are most commonly made of plastic or metal. Even the dye that gives color to the cotton may be an issue when the fibers degrade and leave microscopic amounts of dye in the soil. Plastic and synthetic materials can be made with additives to help them degrade faster. But if they don’t fully break down into basic elements, the resulting “microplastic” can pollute the environment.

Consumers are left trying to make sense of biodegradable and compostable claims. According to the Federal Trade Commission, when something is said to be biodegradable or compostable, it should be supported by tests demonstrating complete degradation within a short period of time. It is important that test conditions represent the product’s actual disposal method, but access to industrial composting is limited and most landfills are designed to prevent the degradation of waste. For these reasons, we do not market Patagonia products and packaging as biodegradable or compostable. Instead we are striving to use recycled content, minimize packaging, design for recyclability, and offer a collection program for recycling.

Biodegradable soaps and detergents have a much better chance of fulfilling their stated destinies. After they go down the drain they end up at water treatment plants, which use microbes in their cleaning processes. The biodegradable products can be easily broken down, resulting in cleaner water after treatment. Therefore we recommend that our customers wash their clothing with biodegradable detergents.