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Bioplastics

What are Bioplastics?

Bioplastics are biodegradable and in some cases, compostable plastics derived from renewable raw materials such as starch from corn, potato, tapioca, or other plants and vegetables.

Bioplastics are not hazardous in production and biodegrade via natural processes. Traditional plastic bags and food containers require great amounts of energy and raw materials (natural gas, oil and coal) to produce and recycle. Only approximately 1-3% of plastic bags are recycled and plastics in our landfills take hundreds or thousands of years to degrade and tax our environment by leaching toxins. (Note: bioplastics cannot and should not be introduced into the traditional plastic recycling stream because corn plastic "contaminates" the process, weakening the resulting products made after recycling.)

The time needed to degrade or compost bioplastics varies and it is important to make distinctions between biodegradable and compostable.

BIODEGRADABLE

Biodegradable plastic will degrade naturally from microorganisms and other natural processes over a period of time. This can occur in a wide variety of environments and will not result in toxic residues.

COMPOSTABLE

Compostable Plastic is capable of undergoing biological decomposition in a compost site when mixed with natural soil components.

Because the definition of "compostable" has become closely aligned with the 90 day ASTM Standard (D6400) the term has lost much of its meaning (many things require more than 90 days to compost including corn cobs, for example). Therefore, compostable plastics are a contentious issue that, while they draw attention to the proper role of bioplastics (which will someday replace over 50% of all petroleum plastics in commercial use), is being hotly debated.

The role of compostability and relevant legislation, patents, and standards will most likely be litigated by various interest groups, including the petroleum industry and others with an agenda such as large multinational patent cartels.

What is Biomass?

Biomass refers to living and recently living biological material used as fuel or industrial production -- fibers, chemicals or heat. Biomass may also include biodegradable wastes that can be burnt as fuel. It excludes organic material which has been transformed by geological processes into substances such as coal or petroleum. Biomass is part of the carbon cycle. Carbon from the atmosphere is converted into biological matter by photosynthesis.

Upon decay or combustion the carbon is returned into the atmosphere. This happens over a relatively short timescale and plant matter used as a fuel can be constantly replaced by planting for new growth. Therefore a reasonably stable level of atmospheric carbon results from its use as a fuel.

Although fossil fuels have their origin in ancient biomass, they are not considered biomass because they contain carbon that has been 'out' of the carbon cycle for a very long time. Their combustion therefore disturbs the carbon dioxide content in the atmosphere, and this is *the primary cause of global warming*.

Growing Practices

Where is your corn grown?

Trellis Earth™ products contain PLA and PLA-related ingredients from several major suppliers serving the global marketplace including suppliers in America, Japan, and primarily China.

Is your corn genetically modified?

Corn grown in China is less likely to have genetically modified DNA for various reasons. We believe our product does not have any GMO corn in it but we do not guarantee it (because we have no means to test for it).

Manufacturing

How is your product made?

Bioplastics are made through a natural, yet scientific, step-by-step process:

1. Corn is grown on a conventional farm and harvested.
2. The corn is processed to separate the starch, and the starch is then converted into sugar. Microorganisms are added to convert the sugar into lactic acid. At this stage, the material is commonly referred to as PLA (poly-lactic acid)
3. The PLA is blended with different starches and additives for various characteristics in the final product, such as heat resistance and durability. These additives are a combination of biomass, biopolymers, and proprietary biodegradable ingredients.
4. These ingredients bond together in chains that are then granulated (formed into pellets).
5. The pellets are melted and shaped into a variety of packaging and food containers by Trellis Earth Products, Inc.

Product Info

What is unique about Trellis Earth™ products?

Our products are based on PLA technology but has added PLA-related ingredients which result in greater formability and heat and wear resistance than products made from pure PLA, sugar cane, or potato starch. Our products can be microwaved with no leaching of any toxic material.

Trellis Earth™ products and raw materials require much less energy to harvest and process than paper, and introduce no poisons to the environment, such as bleach used to whiten paper (often discharged into streams). Our bags are more environmentally friendly than paper bags which promote deforestation.

What is the maximum temperature your products can withstand?

Our products withstand temperatures up to 248 degrees Fahrenheit.

Where is your product used?

Currently our product, as sold by others, is very popular in Asia, Europe, South America, Africa and the Middle East.

Can I order custom products?

Custom ordered products require a minimum commitment of 3 million units from the factory.

Custom printing is available for some items, such as our bags, and requires a minimum order of 100,000 unit orders.

How does your product compare cost-wise with other biodegradable plastics?

Our products are less expensive than many products on the market because we produce in very large volume for the global commercial food industry.

When will you be selling your products in smaller quantities?

We leave selling our products in partial carton, smaller quantities, and custom orders to our online eBay Store, www.TrellisEarthStore.com. If your favorite store does not carry our products, ask them to contact Tom Smith at 503-281-0307, or 877-281-0307. We sell by the cartons at wholesale prices from both our main web site and our eBay Store site.

How is your product better than paper and plastic?

Although plastic requires less energy to produce than paper, plastic is derived from petroleum. Plastic consumption increases our dependency on oil and foreign oil supplies. Just 14 plastic shopping bags contain enough embodied petroleum energy to drive a car 1 mile.

Paper production uses more resources (trees, water, energy), and takes up valuable space in landfills, and requires significant chemicals. Although paper can be biodegradable, typical landfills lack the water, light, and oxygen required for the degradation process. Paper bag consumption contributes to global warming as trees are cut down, reducing our supply of oxygen, and greenhouses gases and toxic chemicals are emitted in the paper production process. Although more paper bags are recycled than plastic, paper requires 91% more energy to recycle per pound.

The Trellis Earth™ biodegradable plastics return safely and completely to the environment through naturally occurring biological and non-toxic generating processes. No sorting or special composting are required -- they do so in landfills at rates that depend on natural processes as the landfills decompose and disintegrate.

Disposal

Is your product biodegradable?

Yes, Trellis Earth™ products are made from ingredients that when decomposed become inert elements supportive of natural biological processes with non-toxic results.

Are your products certified to the ASTM standards for biodegradability?

Our products conform to the ASTM 6954 standard for biodegradable plastics.

We are developing a line of grocery bags and trash liners that are ASTM 6400 certified by the **Biodegradable Products Institute** for compostability. We introduce these products now since their completion of certification in August, 2007.

Can I recycle your products?

Trellis Earth™ believes that much of modern recycling is under the influence of governments and businesses that do not have the environment's interest at heart. Because of this, we believe that repurposing is a better approach, but repurposing where it makes sense such as in communities such as hospitals or universities with co-generation plants where Trellis Earth™ products can be used as fuel, after they are used as food service items, and thereby their latent BTU value contributes clean energy. But repurposing is not sensible in most urban, consumer environments. And for that reason we believe not attempting to recycle corn plastic or compost it is more ecologically responsible -- it will naturally deteriorate and biodegrade in the landfill, as opposed to traditional petroleum based plastics that will not.

There are many ways that corn plastic benefits the environment -- in its production, in its use of sustainable resources, and in its decomposition. But what is right for disposal and reuse is circumstance and location dependent and therefore many solutions need to be cultivated by many types of users and communities for what works best from an ecological perspective.

Can I compost your materials in my yard or is a municipal composting program better?

Trying to compost Trellis Earth products is, we believe, not a good use of resources. Trellis Earth products are design to biodegrade to inert water and carbon through natural processes and chemical and biological interactions. Composting is the art of creating soil -- but corn plastic biodegrades to primarily gasses and water vapor, so its role in soil production is limited. Much of the hype about composting of Earth friendly products is, we believe, over rated and misguided.