



# PBi

PACKAGING...SIMPLIFIED.

# SUSTAINABILITY & PACKAGING



***If a product is manufactured from a renewable resource, but in the process the earth is left with a permanent deficit un-payable by the next generation, that manufacturing process is not sustainable.***

The purpose of this document is to shed some light on the subject of environmentally friendly packaging. PBi is committed to sustainable packaging and we will continue to push towards sustainability, but we also want to keep things in perspective.

***In the PBi spirit of “Packaging...Simplified”, our objective in this document is to:***

- A. Outline the issues
- B. Provide clear options for sustainability
- C. Describe the benefits of today’s barrier packaging
- D. Inform about the steps we are taking

## **The Issues**

Environmental Sustainability: *“The love you take is equal to the love you make” - J. Lennon*

We agree with this concept and we exercise caution when addressing flexible packaging. When it comes to the environment, managing expectations is critical. There is no fast and easy answer, but there are options. Let’s keep it simple.

A decade ago, conventional wisdom said that if a product was biodegradable or it used a renewable resource (e.g. a tree, a grain, etc.), it was automatically “environmentally friendly” and if a product was made from a limited resource (e.g. fossil fuels) it was automatically “bad.” This thought process is changing as both consumers and manufacturers examine the total life cycle of products on the earth.

If a product is manufactured from a renewable resource, but in the process the earth is left with a permanent deficit un-payable by the next generation, that manufacturing process is not sustainable. Similarly, if a product is manufactured in a way that does not negatively affect the earth, but it is significantly more expensive than existing products, history proves the product will not be used by those who have the freedom to afford it and it will be inaccessible to the majority of the inhabitants of the earth. Creating products that won’t be used or can’t be used will not help sustain the earth.

Sustainability, at PBi, means responsibility to the next generation as it relates to the earth while meeting the economic realities that make a package usable. This is not an easy task and there are no fast and/or low cost solutions. Some options on the market today are steps in the right direction, but they frequently involve compromise in package integrity, increased cost, by-products, or mitigating factors that offset perceived benefits (\*see paper and incineration).

## Options For Sustainability

### 1. PLA or Polylactic Acid (aka “corn film”, NatureWorks, Earthfirst etc.)

This is made from sugar in corn starch. The film is clear and crispy – like a candy wrapper. Many film suppliers, including PBI, are testing PLA as a component within a normal film lamination – the future offers promise! PLA as a component part of the package (bag) supports the use of renewable resources, but the end product, the bag, is not biodegradable, and recycling is limited. Many questions must be answered about the impact of sharply increased corn production on the earth, e.g. increased use of fossil fuels in planting and harvesting, water usage, increased fertilizer use, etc. We must also consider the impact on the earth’s inhabitants if the cost of vital food and animal feeds increases.<sup>1</sup>

Additionally, all indications are these newer films will be considerably more expensive than existing options.

In short, PLA is good start, but it is not functional as a “stand alone material” for coffee, pet food, snacks etc. There continues to be compromises and challenges in the search for sustainable raw materials. Marc Bray, President of Flexstar Packaging Inc in Vancouver, BC added “...issues we have when shifting to 100% sustainable products have been barrier properties and the lack of high quality raw materials that can be sourced with reliability...”



*Composting Trials  
at PBI DAY 1*



*Composting Trials  
at PBI DAY 10*

### 2. Biodegradable Paper/ PLA Bags With Tin Tie

This is an area with promise and PBI is conducting trials in our composter. The ubiquitous paper/plastic package with a wire tin tie is not biodegradable or recyclable and the paper/PLA product shows exciting promise without significant added cost.

### 3. Reusable Totes – Reusable Totes are an easy, simple, yet effective way to reduce waste. Totes are:

- handy and convenient for the consumer to use
- relatively inexpensive
- durable and long lasting
- in most cases – not recyclable – despite sometimes being marketed as otherwise
- a large consumer of fuel in transport

### 4. Jute Products – Jute is a renewable plant with a considerably short growing cycle, typically 4 months. However, the supply can be challenging, as jute is grown in one region of the world and jute products are usually hand-made, making lead times longer. In our experience, jute is best used as a secondary package to give your products a higher retail appeal.

### 5. Tin Cans – This is a good, reusable option for many products such as tea, nutraceuticals and specialty foods, but the offsetting issues are:

- cost of the container is higher than most flexible packaging
- coffee must be degassed prior to sealing
- shipping via gas guzzling trucks

### How Is PLA Made?

The starting material for polylactic acid is starch from a renewable resource such as corn. Corn is milled, which separates starch from the raw material. Unrefined dextrose is then processed from the starch. Dextrose is turned into lactic acid using fermentation, similar to that used by beer and wine producers.

Corn-based substitutes for petroleum are good for the environment, but experts have said they also contribute to a rise in global food import costs, making it harder for developing countries to feed their populations....”

*(AP) Corn-Based Polymer Production Begins  
DuPont, Tate & Lyle Begin Production Of Corn-  
Based Polymer That Can Replace Petroleum  
LOUDON, Tenn., June 8, 2007*

4. **Paper Products** – Paper is renewable, but paper has little – if any – barrier properties. The offsetting impacts on the environment are:
- we need to clear forests
  - manufacture of paper is dirty<sup>2,3,4</sup>

## Benefits, Options and Improvements In Today's Barrier Packaging

The current “foil bag” used for coffee, tea, food, pet foods, snacks, etc. while not the ultimate, sustainable solution (because of its use of petroleum for the outer, printable surface and the inner, sealable layer) is a responsible use of the earth's resources. Plastic packaging for food efficiently and effectively delivers the earth's food resources to those who need it, while consuming minimal natural resources.

### Current Packaging Uses Minimal Resources

- Only about 4-5 percent of the United States fossil energy consumption from natural gas is actually used to produce all of the plastic, carpets and clothing, films, packages, appliances, shapes, building materials, automobiles, gadgets, and toys that we use.<sup>5</sup>
- Plastic packaging uses only *one-half percent* of all oil and gas consumed in the United States.<sup>6</sup>
- Plastic production is an energy-efficient process and the resulting packages are extremely lightweight compared to the products they contain. If alternatives were substituted for plastic products about 26% more energy would be required and about 56% more greenhouse gas (GHG) emissions would result.<sup>7</sup>
- Paper bags are not “no-brainer” alternatives for plastic. They do not protect products nearly as well as plastic, they are heavier, and they use more resources to produce. This was verified in a study of the total life cycle of plastic grocery bags vs. paper grocery sacks.<sup>8</sup>

### Current Packaging Helps Feed the World

- A sustainable packaging solution would not be helpful if it did not address the need for the world, especially the developing world, to deliver food to its people.
- Just 2 pounds of plastic can deliver 1,300 ounces – roughly 10 gallons – of a beverage such as juice, soda or water. It would take 3 pounds of aluminum to bring home the same amount of product, 8 pounds of steel or over 40 pounds of glass.<sup>9</sup>
- Modern packaging – such as heat-sealed plastic pouches and wraps – helps keep food fresh and free of contamination. That means the resources that went into producing that food are not wasted.<sup>10</sup>

### Improvements in Current Packaging

- The plastic film industry is continually working on decreasing the weight of thin films even further while maintaining protective barrier and strength to use even less of the earth's resources.
- Recycling efforts have been successful at reducing the amount of waste going into landfills.<sup>11,12,13</sup>
- Advances in water-based inks and extrusion lamination technologies allow for a package manufacturing that does not impact the earth with solvent emissions. PBi Side-Gusseted Stock Bags are made with no solvents which can impact the earth when emitted after use.

<sup>1</sup> The Washington Post, “Corn Can't Solve Our Problem,” By David Tilman and Jason Hill, March 25, 2007; B01

<sup>2</sup> Recycle on the Go: Basic Information (October 18, 2007). Retrieved on 2007-10-30.

Recycling Paper and Glass. US Department of Energy (September, 2006). Retrieved on 2007-10-30.

<sup>3</sup> MacFadden, Todd; Michael P. Vogel (June, 1996). Facts About Paper. Printers' National Environmental Assistance Center, Montana State University. Retrieved on 2007-10-30.

<sup>4</sup> Recycling Paper and Glass. US Department of Energy (September, 2006). Retrieved on 2007-10-30.

<sup>5</sup> [http://www.americanchemistry.com/s\\_plastics/sec\\_content.asp?CID=1179&DID=4390](http://www.americanchemistry.com/s_plastics/sec_content.asp?CID=1179&DID=4390), retrieved February 14, 2008.

<sup>6</sup> Osborn, Kenton and Wilmer Jenkins. Plastic Films: Technology and Packaging Application. Lancaster, PA: Technomic Publishing Company, Inc., 1992.

<sup>7</sup> [http://www.americanchemistry.com/s\\_plastics/sec\\_content.asp?CID=1179&DID=4390](http://www.americanchemistry.com/s_plastics/sec_content.asp?CID=1179&DID=4390), retrieved February 14, 2008.

<sup>8</sup> Franklin and Associates Inc., Resource and Environmental Profile Analysis of Polyethylene and Unbleached Paper Grocery Sacks, 1990.

<sup>9</sup> [http://www.americanchemistry.com/s\\_plastics/doc.asp?CID=1571&DID=5972](http://www.americanchemistry.com/s_plastics/doc.asp?CID=1571&DID=5972), retrieved February 14, 2008

<sup>10</sup> [http://www.americanchemistry.com/s\\_plastics/doc.asp?CID=1571&DID=5972](http://www.americanchemistry.com/s_plastics/doc.asp?CID=1571&DID=5972), retrieved February 14, 2008

<sup>11</sup> New York Times, August 12, 2005, “Waste Yes, Want Not; Rumors of a Shortage of Dump Space Were Greatly Exaggerated”

<sup>12</sup> Environmental Industry Summit 2004, March 10 - 12, 2004, Coronado Island Marriott Resort, San Diego, California

<sup>13</sup> American Chemistry Council, “2005 National Post-Consumer Plastic Bottle Recycling Report”. 2006



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# PBi PRODUCTS



**PBi Side-Gusseted Stock Bags are made with no solvents**



**PBi Paper / PLA bags**



**PBi Re-usable totes**



**PBi Tin Cans**



**PBi Jute bags**



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