

# GREEN

## R E P O R T

# GREEN SEAL'S Choose

### RIGID QUICK SERVE FOOD PACKAGING



In 1996, 1.8 million tons of quick serve food packaging (plates, cups, bowls, and other products) were thrown away. It would take, on average, 132,743 garbage trucks to carry this amount of packaging—which, if lined up bumper-to-bumper, would stretch from Philadelphia to Chicago.



Each American throws away an average of 100 polystyrene cups each year; and the expected lifetime of each cup is over 500 years.

**F**or the average consumer, quick serve food packaging is the paper plate, plastic clamshell or paper wrap in which lunch is carried back to the office. Such packaging can also be found around perishable goods purchased at the grocery store. This *Choose Green Report* focuses on the packaging found in food service operations.

Green Seal appreciates the complex and controversial nature of disposable food service products, and we favor reusable plates and cups when this option is reasonable and breakage costs are minimal. For this issue, we have examined environmental impacts of paper,

plastic and composite disposable quick serve food packaging.

There are two major types of food packaging, rigid (such as a hard clamshell for carryout) and non-rigid (such as a paper wrap for a burger). Whenever food types allow, non-rigid packaging should be used to minimize the volume of the waste going to the landfill and other environmental impacts. However, in some cases it is not feasible to use paper wrap for salads or many entrees.

In this report, Green Seal recommends specific rigid disposable quick serve products based on the type of material, recycled content, bleaching, and biodegradability. Because the package weight can be related to the amount of space it takes up



in a landfill, for whichever type of packaging you choose, Green Seal recommends using the packaging with the lowest weight suitable for your needs. With those criteria in mind, this *Choose Green Report* reviews cups, carryout clamshells, plates, trays, platters and bowls made of paperboard, composite materials or polystyrene.

Overall, Green Seal finds that non-rigid packaging is preferable when appropriate for the packaging needs. Beyond that, Green Seal recommends using packaging made from renewable resources (such as paperboard or composite materials) that contain either some recycled or unbleached content. The packaging should also be easily biodegradable in the environment and as light weight as possible. While the weight of polystyrene packaging is often lighter than that made of paperboard or composite materials, it is not biodegradable or made from renewable resources.

The *Choose Green Report* is published for Green Seal Environmental Partners. To become an Environmental Partner, or to receive a copy of this report, contact Green Seal at (202) 872-6400 x 21 or [greenseal@greenseal.org](mailto:green Seal@greenseal.org).

Green Seal President and CEO, *Arthur B. Weissman*

Editor, *Margaret E. Blanchard*

Contributor, *Mark Petruzzi*

Design, *Cutting Edge Graphics*

Printed on Green Seal-certified *Mohawk Satin Cool White Recycled paper, 30% postconsumer content*

Copyright © 1999, Green Seal, Inc. [www.greenseal.org](http://www.greenseal.org)



## Paper Packaging

Many types of paperboard are available and currently used in the quick serve restaurant industry. Non-corrugated paperboard is most commonly used for cups and plates. Because this type of paperboard can be ordered in non-bleached forms it can have lower production energy needs than other available food packaging options. Another option is molded fiber tableware which is produced by using pre-consumer paperboard pulp to produce approximately 99% reclaimed content products.

Fluted paper quick serve packaging is thinly corrugated paperboard that is often folded into hinged containers. In 1996 the corrugated packaging industry produced 400 billion square feet of corrugated material at a value of \$21 billion. This packaging comes in different sizes identified by different letters of the alphabet. The most common in the food packaging industry is f-flute.

Currently, the most common f-flute configuration consists of three separate layers.

*Whenever food types allow, non-rigid packaging should be used to minimize the volume of the waste going to the landfill and other environmental impacts.*

Fluted packaging typically requires a protective liner, which is commonly made of low-density polyethylene (LDPE), waxes, or other coatings. The outer layers are virgin bleached kraft paperboard that are coated with protective liners. The inner layer is a corrugated section made of 50% post consumer recycled bleached pulp. This inner layer allows this type of packaging to contain some recycled content without worries about contamination. Those who order f-flute in large quantities can also specify unbleached paperboard.

## Starch/Limestone Composite Packaging

This new type of packaging is a combination of potato starch, limestone and wood fiber. Forty-five percent of the packaging is potato starch used as a binding material. Twenty-five percent is limestone and most of the remaining percentage is wood fiber used for product reinforcement. Both the interior and the exterior surfaces are coated, the interior with biodegradable paraffin wax and the exterior with polyvinyl acetate.

The production process involves blending the ingredients together and pouring them into molds. The molds are then heated for less than one minute and the "baked" products are coated with liners.



## SUSTAINABLE FOOD SERVICE

### *Follow the three R's*

Sustainable means using renewable resources and making procurement decisions in a responsible manner. This translates into the "three Rs": Reduce, Reuse and Recycle. By working the Rs into your basic philosophy, your company will be on its way to reducing negative impacts on the environment.

#### **1** REDUCE

The first action by any food service operation should be to look for ways to reduce waste. One way to reduce waste is to choose flexible packaging or lighter weight packaging appropriate for your food packaging needs. You can also limit waste disposal by encouraging people to bring their own cups and plates, perhaps by offering these customers a discount.

#### **2** REUSE

Many consumers in food service operations take their food with them; however, if you provide sit down service, reusable cutlery, plates and glasses can provide a significant reduction in solid waste. Studies have shown reusable service items remain the best environmental option even when considering the energy and water used to wash them. For example, a recent study by a Swiss group estimated that typical restaurants use ceramic dishware up to 2500 times. Environmental Defense Fund scientists found that overall, ceramic mugs at 1000 uses have significantly less air and water emissions as well as solid waste and energy needed throughout their production and lifecycle, when compared to paper or polystyrene.



#### **3** RECYCLE

Setting up a recycling bin for food service customers takes several steps toward waste reduction. Recycling reduces fees that are assessed for waste disposal. Recycling also provides manufacturers with the opportunity to reduce production of new virgin materials. The recycled food packaging is usually not recycled back into food packaging materials due to concerns about contamination. Instead, the materials are recycled into other plastic articles.

A California study showed that when mixed with yard waste, the organic parts of the composite were found to totally degrade within 150 days. The non-organic film was also found to degrade after a much longer time, up to 92 weeks. A similar study observed the action of beach surf on the packaging. After 55 minutes in the surf, the composite packaging completely disappeared. After the same amount of time, f-flute remained at least 80% intact, while the polystyrene appeared to be untouched.

### Polystyrene

Polystyrene is the most common plastic polymer used in the food packaging industry because it can be found in two versatile forms for use in both hot and cold food products. Expanded polystyrene is often incorrectly referred to by the Dow Chemical trademark name Styrofoam®. In 1997, 120 million pounds of foam polystyrene hinged containers were used in the US food packaging industry. In fact, of the 28 billion plates, platters and bowls produced in the US 57% are

made from foam polystyrene. Because this product's use has grown exponentially, it has become a serious issue for both members of the food packaging industry and the environmental community.

Polystyrene is manufactured through the chemical processing of benzene and ethylene. Because both benzene and ethylene are by-products of petroleum processing, concerns have been raised about the loss of non-renewable fossil fuel resources.

At present, most plastic food packaging applications aside from bottles and cans do not lend themselves to recycling, primarily due to the presence of food residues on the used packaging. While some types of plastic food packaging are technically recyclable, very few operations exist to sort, collect, clean, and process the used packaging into a useable material. In the past decade a network of polystyrene recycling plants has developed in the US, but few food service operations are linked to this system. Because of contamination concerns, few companies recycle the polystyrene back into products to be used in the food packaging industry. If your foodservice operation is interested in exploring plastic foodservice recycling further, contact the Polystyrene Packaging Council at 202-974-5321.

## Green Seal's Recommendations for Choosing the Right Food Packaging

■ **Select non-rigid packaging whenever suitable for your service needs.** Non-rigid packaging (e.g., paper or foil wraps) is typically lighter in weight, uses fewer material resources than rigid clamshells or containers with lids and occupies less landfill space.

■ **Use packaging made from a renewable resource.** Wherever possible, avoid quick serve food packaging made from non-renewable, petroleum-derived plastic. At present, only a few types of plastic (e.g., LDPE, HDPE, and PET) are currently being widely recycled, and the recycled plastic material is rarely used in new food packaging products.

Packaging products made from wood fiber or other crop-derived materials can incorporate recycled content and are therefore considered more sustainable.

■ **Buy recycled and/or unbleached fiber content.** If possible select food packaging that contains recycled content, preferably post-consumer recycled content, and that is unbleached. However, if combinations of these attributes are difficult to find, Green Seal recommends products which have either recycled content or unbleached fiber content. Products which contain recycled content help divert industrial and consumer waste paper into new products and use fewer virgin resources. The bleaching of paper with chlorine and its derivatives is energy-intensive and results in a large volume of wastewater and harmful byproducts. Most unbleached products contain 100% virgin fibers. It may not be possible to find a product with recycled content that is also unbleached, but try to look for one or both attributes. Keep in mind that a brown paper coffee cup works just as well as a bleached white one!

■ **Pick products that are easily biodegradable in the environment.** While recent studies have shown that most items do not degrade quickly in the relatively air-less and moisture-less environment of a modern sanitary landfill, the fate of food

### HOW TO CHOOSE THE RIGHT FOOD PACKAGING MATERIALS

- Select non-rigid packaging whenever suitable for your service needs.
- Use packaging made from a renewable resource.
- Buy recycled and/or unbleached fiber content.
- Pick products that are easily biodegradable in the environment.
- Use the minimum weight within food packaging type.



packaging is not always straightforward. In a cafeteria or food court setting, most used food packaging usually ends up in a waste receptacle. However, land-based litter contains 38% plastic and 40% paper, while marine litter contains 61% plastic and 11% paper, and much of this debris is packaging waste. Plastic packaging waste in the environment poses a threat to many types of wildlife and marine animals. The animals are often attracted to the food residue on the packaging or in the case of marine animals, mistake the floating plastic packaging for food. For this reason, food packaging

## Recommended Rigid Food Packaging Products

Whenever possible non-rigid packaging is recommended over rigid to limit the amount of waste produced and other environmental impacts.

| MANUFACTURER/PRODUCT NAME                             | CLASSIFICATION  | RECYCLED CONTENT/ BLEACHING           | MATERIALS  | BIO-DEGRADABLE   |
|---|---|---------------------------------------|--|------------------|
| EarthShell® Corp./<br>EarthShell®                     | Hinged Containers <sup>1</sup>                              | ~ 45%                                 | Starch<br>Limestone<br>Wood Fiber<br>Paraffin wax liner<br>Polyvinyl acetate liner<br>Polyethylene wax liner | Yes <sup>2</sup> |
| Royal Chinet®/<br>Tableware Classic White             | Molded fiber tableware (plates, bowls, platters and dishes) | ~ 99% (reclaimed fiber)               | Pre-consumer milk carton board and food grade board<br>No liner  | <sup>3</sup>     |
| Royal Chinet® /<br>Strongholder®                      | Molded fiber carry trays                                    | ~ 99% (reclaimed fiber)               | Post-consumer newsprint<br>No liner  | <sup>3</sup>     |
| Royal Chinet®<br>Naturals™ Tableware                  | Molded fiber tableware (plates, bowls, and platters)        | 95% (reclaimed fiber)                 | Pre-consumer milk carton board and food grade board<br>No liner  | <sup>3</sup>     |
| Royal Chinet®/<br>Paprus® and Savaday®<br>Serviceware | Serviceware plates, circles, trays and bowls                | ~ 100% (reclaimed and recycled fiber) | Pre and post consumer newsprint  | <sup>3</sup>     |
| Insulair Inc./<br>INSULAIR™                           | Paper cups  | 65%                                   | Post consumer paperboard<br>Polyethylene liner   | Yes <sup>2</sup> |
| Royal Chinet®/<br>Naturals™ Hot Cups                  | Hot cups  | 0%<br>Unbleached                      | Paperboard<br>Polyethylene liner   | Yes <sup>2</sup> |

### NOTES

<sup>1</sup> EarthShell plans to produce plates, bowls, trays, hot and cold cups in the future.

<sup>2</sup> The packaging is easily degradable but at least one coating is not.

<sup>3</sup> Although these products appear to be biodegradable, Chinet does not make this claim.

© 1999, Green Seal, Inc. Use of this table for commercial purposes is prohibited. Information in this table was confirmed with the manufacturer. It has not been independently verified by Green Seal unless otherwise identified as Green Seal certified.

that is easily biodegradable in the environment can reduce the negative impacts of inappropriate disposal.

### ■ Use the minimum weight within food packaging type.

Whether paper or composite food packaging is selected, choose the lightest weight product that will meet your performance needs. Lighter weight usually means fewer materials and less impact.

### MANUFACTURER CONTACT INFORMATION

EarthShell® Corp. .... 410-979-1300

Insulair Inc. .... 415-989-2877

The Chinet® Company ..... 800-244-6382



1001 CONNECTICUT AVE., NW  
SUITE 827  
WASHINGTON, D.C. 20036

NON-PROFIT ORG.  
US POSTAGE  
**PAID**  
WASHINGTON, DC  
PERMIT NO. 5515

## IN THIS ISSUE

- **Recommended Rigid Food Packaging**
- *Types of Packaging*
  - Paper
  - Starch/Limestone
  - Polystyrene
- *A Sustainable Cafeteria*

**Look for these topics in our next issue on Room Air Conditioning . . .**

- **Room Air Conditioners**
- **Package Terminal Air Conditioners**
- **Energy Efficiency**
- **Refrigerant Type**
- **Recommended Products**

