

Are You Keeping Up with Trends in Recyclable Barrier Coatings?

Tips for Brand Managers in the Food Preparation
& Retail Packaging Industries





Tips for Brand Managers in the Food Preparation and Retail Packaging Industries

Over the past several years, the role of barrier coatings in packaging products has been steadily shifting and evolving as increased interest in packaging with recyclable barrier coatings is driving producers to offer more sustainable, eco-friendly options.

In this eBook, we'll explore some of the most popular new trends in recyclable barrier coatings, but first, let's take a look at some basics.

What Are Barrier Coatings?

The phrase “barrier coatings” refers to any of a number of products that are used to add specific functionalities to paper-based packaging products.

The majority of barrier coatings are employed by the food processing and packaging industries. In these applications, food-grade barrier coatings are used as moisture barriers, oil barriers, and oxygen barriers.

On the following page are some examples of how coatings are used in food applications.



How Coatings Are Used in Food Applications



Bakery Boxes: Food-grade barrier coatings are used for oil and grease barriers.



Paper Cups: Use barrier coatings as moisture barriers, keeping fluids contained.



Dry Food Packets: Use barrier coatings as oxygen barriers to keep contents fresh.

The demand for these types of barrier-coated, paper-based products is growing at a tremendous rate. In 2014, roughly [2.4 million tons of coated paper-packaging material was used globally](#), and that number is expected to reach 3.2 million tons in 2020 – an increase of more than 133,000 tons a year. This rising demand is being propelled by a combination of factors, namely growing markets in underdeveloped regions and increasing consumer demand for more sustainable products.

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Typical Applications for Barrier Coatings

Many different materials can be used to make barrier coatings. The majority of them are extrusion polymers, or “polys,” such as polyethylene (PE), polypropylene (PP), polyvinyl chloride (PVC), polyethylene terephthalate (PET), recycled PET (rPET), and polyamide (more commonly known as nylon).

These extrusion polymers are all traditional types of plastic and, depending on the specific material used and how it’s treated, will perform well in the most common applications required of food-grade barrier coatings – barriers for moisture, fluid, oil, grease, oxygen, and other gases.

Food barrier coatings are used in a range of applications, including:

- **Food packages, such as the bakery boxes, paper cups, and seasoning packets mentioned earlier**
- **Other food packages, such as beverage cartons and frozen food trays**
- **Food preparation products, such as parchment paper, wax paper, and wax paper replacements**

But not every barrier coating is used as a food barrier coating. Aside from the food processing and packaging industries, the consumer electronics industry also makes frequent use of barrier coatings; in these applications, coatings are primarily used as oxygen barriers to prevent humidity from damaging sensitive electronic components.

Barrier Coating Subcategories

While polys and poly blends represent a large percentage of barrier coatings, they are far from the only options. Barrier coatings are generally separated into two distinct categories.

1. On-Machine Barrier Coatings

On-machine barrier coatings include chemicals like Quilon¹ – including Quilon C, H, L, M, and S – and fluorocarbon resins.

2. Off-Machine Barrier Coatings

Off-machine barrier coatings encompass a number of different coating solutions, including poly and poly blends. Other off-machine barrier coatings include wax and other wax-like coatings, silicone and silicone-based coatings, and poly-free coatings.

With the exception of poly-free coatings, however, these varieties of coatings are generally not reusable or recyclable. “Poly-free” refers to barrier coatings that are free of PE or polyester films; when properly manufactured, poly-free solutions can be recycled.

Poly-Free Water-Based Coatings

Sierra Coating Technologies specializes in water-based coatings. As their name implies, these barrier coatings use water as a carrier. They can be made to be recyclable, making them ideal for use in sustainable packaging solutions.



¹Quilon is a chemical solution that forms a polymerized complex when cured. In its initial cured state, Quilon is safe, but when heated, it releases hexavalent chromium (chromium 6) molecules. These molecules are genotoxic carcinogens, which damage human genetic material. For this reason, Quilon is FDA approved on a grandfathered exception basis only and does not have a 21 CFR rating.



Understanding the Shift to Sustainable Packaging

This shift to recyclable packaging solutions and the rising popularity of recyclable barrier coatings are being driven primarily by consumers, who in recent years have developed a greater understanding of environmental and sustainability issues and are now increasingly seeking eco-friendly products. Recent surveys have even shown that more than half of consumers have bought a particular product because it was packaged sustainably.

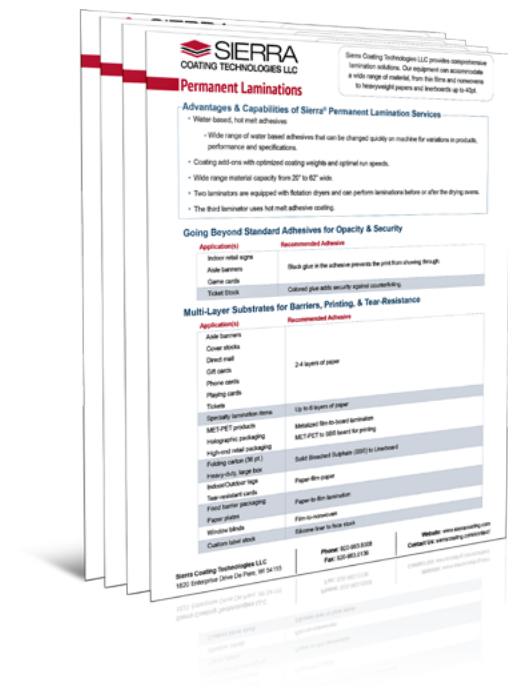
Largely due to their cost efficiency, poly and poly-blend coated paper packaging products are extremely popular, but they are not biodegradable, compostable, or recyclable. Even when the barrier coating material itself is recyclable, such as PET, the process of coating paper and paperboard products with it precludes the possibility of recycling, as the barrier coating and the paper material cannot be economically separated for individual processing.



Staying Ahead of the Curve

As of now, big brands are only in the development phase for sustainable barrier coatings and food-grade options. The entire market, as a matter of fact, is in the development phase when it comes to eco-friendly packaging solutions.

Sierra Coating has stayed ahead of the curve. As a [contract and toll manufacturer](#), we have the ability to test newly developed coating solutions on production equipment, and we've already begun working with leading chemical companies to develop our own eco-friendly, sustainable water-based barrier packaging solutions. Poly-free barrier packaging products are proving to be exciting new solutions in the packaging market, and we are proud to have already [developed expertise in this area](#).



How Sierra Can Help

The team at Sierra Coating understands how strategically important, time-critical, and cost-sensitive new product introductions can be. As an experienced, trusted toll and contract manufacturer, we assist customers through every step of the development process, from the first contact and economic review to raw materials sourcing and trial planning. Our team has the skills and experience needed to quickly and successfully move a product idea to market.

To learn more about how we can help with your packaging needs, download our [Product & Services Fact Sheets](#), where we outline our service capabilities and explore some of the products we're frequently asked to help manufacture.

About Sierra Coating Technologies

Sierra Coating Technologies operates as both a contract and toll manufacturer for brands and commercial printers. Sierra specializes in making products that help companies enter growing markets. Using our wide web laminating and coating equipment, Sierra brings high-quality, efficient manufacturing to the converting of paper and films. If your company wants to enter a new market segment, find a vendor to improve your supply chain, or create a better value model for your product; Sierra can help. With our years of product manufacturing and three coater/laminators, Sierra can deliver your product efficiently and with quality built in throughout the processing.



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