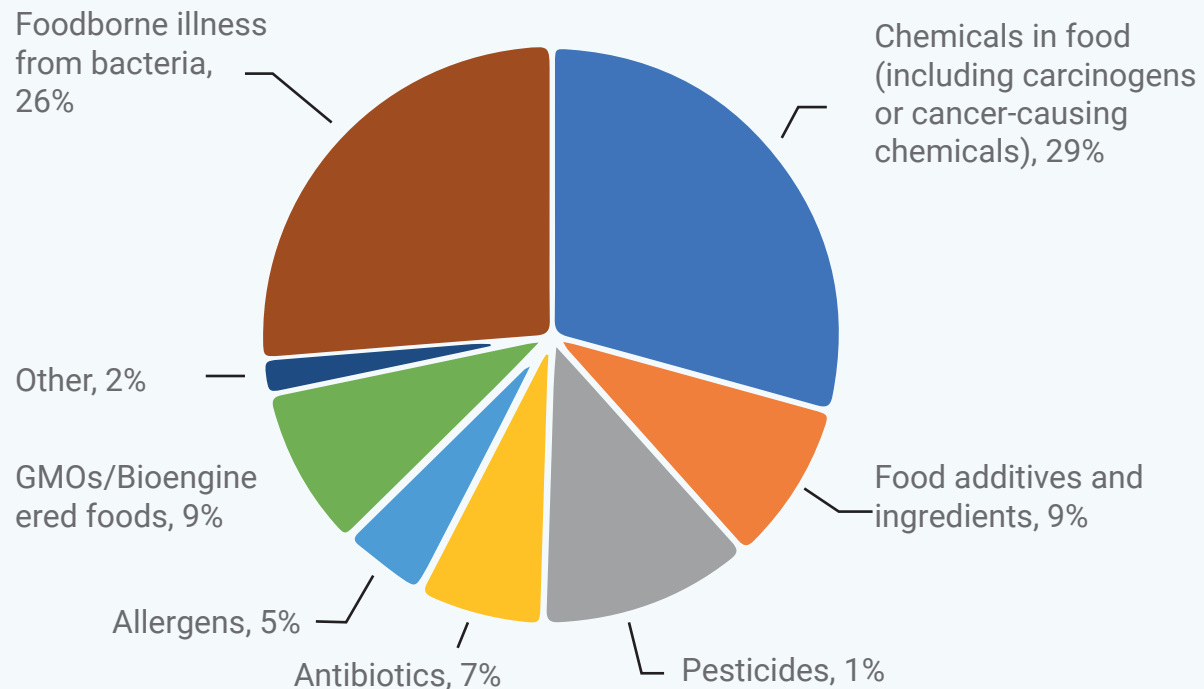




## CHOOSING THE RIGHT PACKAGING FOR FOOD SAFETY

Consumers are naturally concerned about food safety. According to a survey carried out by Daymon Worldwide, 40% of consumers have lost enjoyment of their food due to concerns about the food's safety.<sup>1</sup> This is understandable, given that 1 in 10 people worldwide have become ill from eating contaminated food, and 420,000 die each year.<sup>2</sup> Of all food safety concerns, the top one is chemicals in the food supply, followed by food-borne illnesses.

## Most important food safety issue to consumers in March 2021



From IFIC2021 Food and Health Survey

Customers are putting higher demands on the food industry to be responsible for the products that are produced, processed and sold. Food producers and manufacturers are turning to the packaging industry to partner with them to develop consumer trust in their brands. With the right packaging, customers can rely on the safety of a brand's food products and enjoy their extended shelf-life.

**Flexible packaging formats are designed with a variety of barrier properties**, manufactured to reduce and prevent the entrance of harmful elements. Water, oils, vapor, bacteria, sunlight and oxygen can all compromise a product. Flexible packaging is customized with a variety of structures that will protect food products from possible punctures and exposure to UV rays.

Flexible food packaging provides food safety and preservation, extending shelf life and promoting product quality. Barrier films, seal integrity, and multilayer structures all contribute to the guarantee of food safety against the following four factors: water vapor loss and gain, oxidation of unsaturated fats, microbial growth of pathogens, and enzymatic and non-enzymatic activity.

## Water loss and gain

Depending on the food, water loss and gain can compromise shelf life and cause spoilage. When exposed, dry foods like crispy cereals become chewy and foods with high water content such as strawberries become dried and inedible. During the freeze-thaw cycle, maintaining the integrity of the product becomes time-sensitive as condensation and melting occurs, making strong barriers all the more critical.

**Getting the correct barrier film for your particular product is going to make all the difference in your brand's reputation and your product's quality.**

Materials such as high-density polyethylene or polypropylene do well as a moisture barrier. Multi-layered structures can be customized to products that need a strong barrier that will keep some pieces soft and chewy while others maintain their crunch, such as cereals with fruits and nuts.

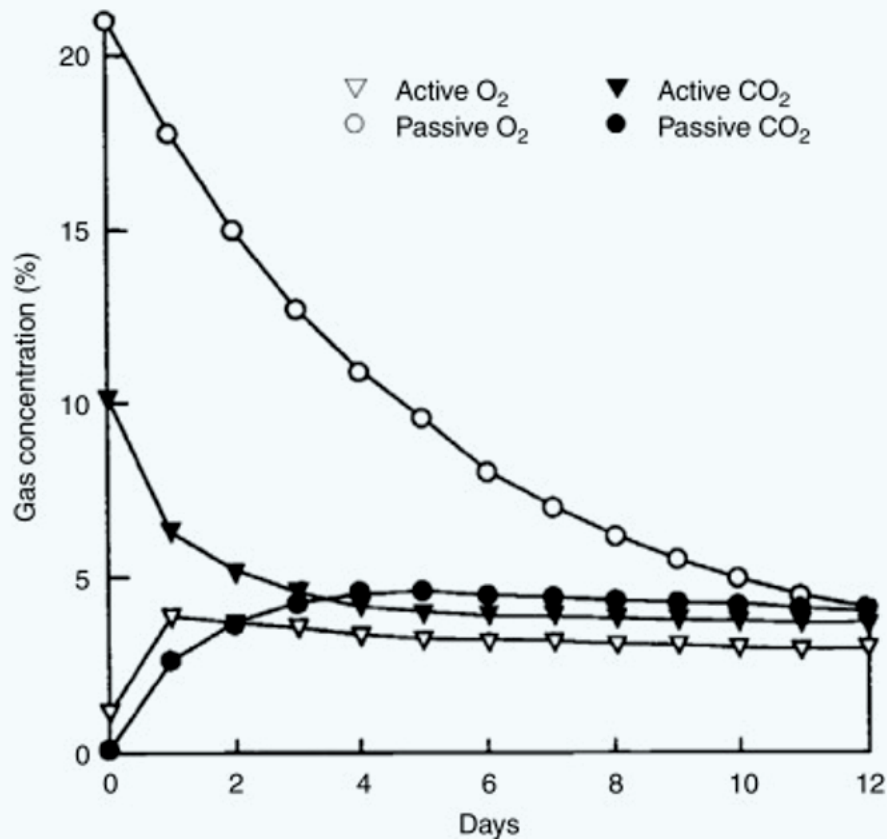




## Oxidation of unsaturated fats

Oxygen has a disastrous effect on food products that contain oxygen-sensitive unsaturated fats, causing undesirable odors and rancidity. Flexible packaging takes on the burden of food safety by creating a durable, strong barrier to oxygen, even in the harshest environments.

A high barrier is required to create an undesirable environment for oxygen and light. **A barrier layer works to keep oxygen out and aromas in - which means longer shelf life for food products.** Films made from materials such as nylon laminations, polyester, and metalized barriers are all utilized when a maximum barrier is necessary for food safety.



Gas concentration % using MAP technologies

## Microbial growth of pathogens

Perhaps the most important food safety concern is the growth of pathogens such as listeria, E. coli and salmonella, to name a few. Creating an internal environment that is not conducive to bacterial growth is absolutely essential, especially since external environments such as distribution centers, stores, and consumer homes cannot be accurately predicted.

It's interesting to note that **packaging can actually purposely inhibit bacterial growth**, such as with modified atmosphere packaging (MAP), which can create an environment which slows and prevents growth of pathogens in food. Vacuum packaging is just one example of MAP technologies.

## Enzymatic and non-enzymatic activity

Enzymes cause flavor and food quality changes over time, especially in fresh fruits and vegetables, as well as foods that were previously frozen. **Active flexible packaging prevents these changes and extends food shelf-life using substances released or absorbed from the product itself.** Properties such as appearance, aroma, consistency, texture and flavor are all maintained, keeping food safety at the forefront.

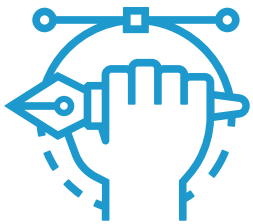
At Polymerall, we believe in partnering with brands to deliver consistent freshness and safety to consumers. With a wide range of films and laminations, we can customize our flexible packaging to provide the right barrier protection for your products. Get in touch today to find out how our custom digitally printed flexible packaging will extend your products' shelf life.



## Why choose Polymerall?

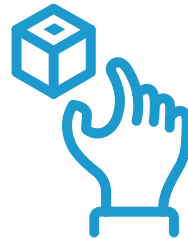
### We Are Your One-Stop Go-To for All Your Flexible Packaging Needs

Our team of creative professionals is dedicated to improving brands with customized, efficient and innovative flexible packaging solutions. Producing custom printed, laminated and specialty finished rollstock, laminated films and high-barrier films is one of our specialties.



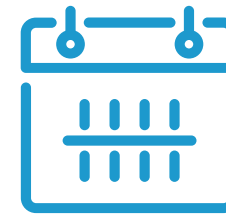
#### Customizable Design

We offer high-quality packaging solutions with sustainable alternatives such as oxo-biodegradable additives, water-based inks and solvent-less lamination, plus all our packaging can be recycled by consumers.



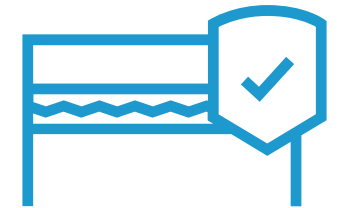
#### Minimum order quantities

We are proud to offer low minimum order quantities.



#### 4 week lead time

4-week lead time, while we work with each client to ensure their product is designed to boost sales, maintain freshness, and lead their company to success.



#### Highest safety certifications

Our facilities and operations have also been awarded the highest safety certifications possible, including the ISO 9001 Quality Control Certification, and the FSSC 22000 Food Safety Certification.

Our manufacturing facilities hold **ISO9001, FSSC 22000, FDA and HACCP certifications** that guarantee the quality of our products and services.





