



# Valor<sup>®</sup>




## Keep O<sub>2</sub> Out & CO<sub>2</sub> In To Preserve Freshness

O<sub>2</sub> reacts with fresh and packaged foods and beverages and alters them - often to their detriment.

Even miniscule amounts of O<sub>2</sub> ingress through the package will cause otherwise appealing products to become unappetizing or spoiled while still on the shelf.

CO<sub>2</sub> puts the bubbles in beer, champagne, seltzer, and soda pop. When that fizz escapes, a crisp, sparkling beverage turns dull and flat.



2000 Georgetowne Drive  
Suite 400  
Sewickley, PA 15143  
+1 800.333.1144  
[packaging.sherwin.com](http://packaging.sherwin.com)

**SHERWIN-WILLIAMS<sup>®</sup>**

060420\_acc  
[Accessibility Statement](#)

## Oxygen (O<sub>2</sub>) - The Enemy of Freshness

All foods and beverages are subject to deterioration by their very nature. The processes are chemical, microbial, or a combination of both.

O<sub>2</sub> combines directly with many components that are naturally present as characteristics of food and beverage products to start with. These include:

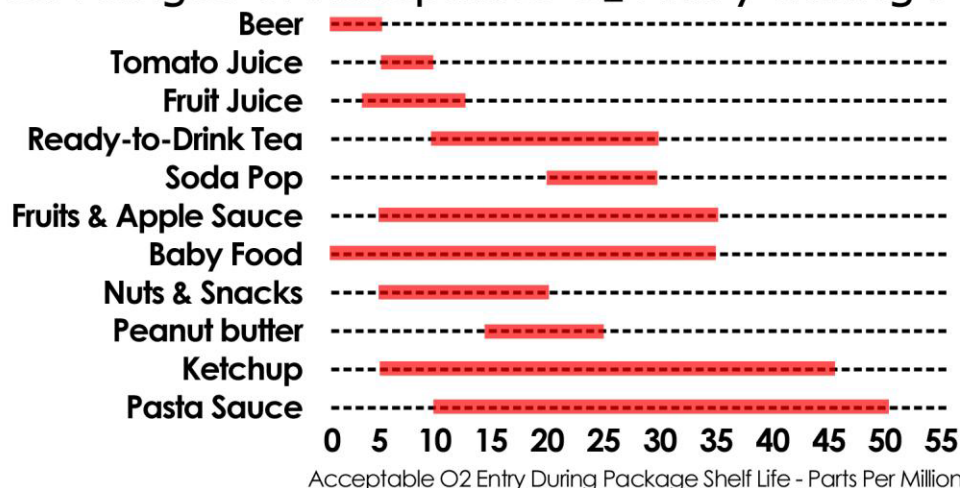
- Flavors
- Dyestuffs
- Amino acids
- Vitamins
- Fatty acids
- Antioxidants

Such chemical action converts them into modified or new compounds that have less than desirable properties.

In addition, O<sub>2</sub> is usually necessary for the transformation of enzymes and the growth of yeasts, molds, and bacteria that most often lead to discoloration, off tastes, odors, sourness, and rancidity.

Surprisingly small quantities of O<sub>2</sub> can cause these changes. So, shelf life for many packaged foods and beverages is, in large part, dependent on the ability of the package to prevent O<sub>2</sub>

## Typical Ranges of Acceptable O<sub>2</sub> Entry during Package Shelf Life



## Carbonation (CO<sub>2</sub>) - The life of the Party

Carbonated soft drinks and beer are enjoyed for their fizz in addition to taste, color, and other qualities. For effervescent products, packaging not only needs to keep damaging O<sub>2</sub> out, it needs to keep CO<sub>2</sub> in. Maintaining CO<sub>2</sub> at the freshly packaged level ensures that the original quality of the beverage is preserved.