

FreshPax®

Oxygen Absorbing Packets and Strips

Advantages

- Extend shelf life
- Prevents growth of aerobic pathogens and spoilage organisms, including molds
- Eliminates the need for additives such as BHA, BHT, sulfur dioxide, sorbates, benzoates, etc.
- Use with gas flushing/vacuum packaging to absorb virtually all oxygen and absorb any oxygen that may permeate the package

Applications

- Breads, cookies, cakes, pastries
- Nuts and snacks
- Candies and confectioneries
- Coffee, tea
- Whole fat dry foods
- Processed, smoked and cured meats
- Cheeses and dairy products
- Dried fruits and vegetables
- Spices and seasonings
- Flour and grain items
- Fresh and pre-cooked pasta and noodles
- Pharmaceuticals and vitamins
- Medical diagnostic kits and devices
- Birdseed and pet food
- Artwork preservation

FreshPax® Oxygen Absorbing Packets and Strips

FreshPax® is a patented oxygen absorber pioneered by Multisorb Technologies to protect packaged foods and other products against spoilage, mold growth, color change, rancidity, loss of nutritive values, insect damage and losses of quality. Produced in packet form using food grade ingredients, FreshPax irreversibly absorbs oxygen inside sealed packaging to less than 0.01% and maintains this level.

Studies show FreshPax is effective in protecting foods and extending shelf life

A study conducted by the Department of Food Science at Cornell University concluded that FreshPax is effective in extending the shelf life of oxygen-sensitive foods and other products. Even under extreme testing conditions, the use of FreshPax resulted in a decrease in mold and mold spoilage of commercial cheese and bread, and considerable extension of shelf life.

The studies showed FreshPax also reduced the formation of n-hexanal and other volatile compounds in high-fat snack foods susceptible to oxidative rancidity.

Hexanal Content (u/kg) in Sunflower Seeds- Stored at 65°C

Days of Storage	High Barrier Film		Moderate Barrier Film	
	With FreshPax	Without	With FreshPax	Without
	1	0.4	0.4	0.4
2	-	-	-	-
3	4.8	4.5	-	-
6	3.1	6.7	3.5	9.4
8	-	-	4.8	8.9
9	1.9	2.3	-	-
10	-	-	6.9	12



Examples of FreshPax Benefits

- Significantly improves keeping qualities of polyunsaturated fats and oils
- Helps retain fresh- roasted flavor of coffee and nuts
- Prevents oxidation of spice oleoresins, in spices themselves and in seasoned foods
- Prevents oxidation of vitamins A, C, and E and extends life of pharmaceuticals
- Inhibits mold in natural cheeses and other fermented dairy products
- Delays non-enzymatic browning of fruits and some vegetables
- Inhibits oxidation and condensation of red pigment of most berries and sauces



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FreshPax Oxygen Absorbers vs. Ordinary Technologies

FreshPax packets are designed to be used in combination with your current packaging methods including gas flushing and vacuum packaging. Unlike gas flushing and vacuum packaging, which merely serve to dilute oxygen, FreshPax modifies package atmospheres by creating very low residual oxygen not normally achievable by these methods

Packaging Method	Results	Benefit
<i>FreshPax</i>	Reduces and maintains Oxygen content in packaging to below 0.01%	Eliminates Aerobic Microbial Growth and Oxidative Chemical Reactions in Packaging
Vacuum and Back Flush	Achieves as little as 0.1% Residual Oxygen	Controls Microbial Growth Temporarily*
Gas Flushing	Approximately 0.5% to 5% Oxygen	Provides Some Control of Aerobic Microbial Growth*

*Mold has been shown to grow in 20 days at 25°C at 0.2% residual oxygen (From "Techniques for the Preservation of Food by Employment of an Oxygen Absorber," Nakamura and Hoshino, 1983)

FreshPax Chemistry	Ideal Applications	Water Activity (estimated)	De-oxygenation Time Range*	Maximum Exposure to Air	Packet Sizes Available (cc of O ₂ Absorbed)
Type B	Moist or semi-moist foods	>0.70	1-3 days	8 hours	(Packets or Strips) 10, 20, 30, 50, 100, 200, 300, 400, 500, 600, 750, 1000, 2000
Type D	Dehydrated or dry foods	<0.70	0.5 to 4 days	2 hours	(Packets or Strips) 25, 50, 100, 200, 300, 400, 500, 600, 750, 1000, 2000
Type R	Refrigerated or where rapid deoxygenation is required	All	8 hours to 2 days - call for specifics	1 hour	50, 100, 200, 300, 400, 500, 600, 750, 1000, 2000
Type M	Moist or semi-moist foods where a carbon dioxide flush has been used	>0.65	30% to 60% of capacity in 2-5 days. Entire capacity in 4-7 days.	1/2 day	20, 50, 100, 200, 400, 1000

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Package Requirements for successful use of FreshPax

FreshPax has been found to be effective when used with many kinds of packaging materials including EVOH and PVDC. Some important considerations to keep in mind regarding certain types of packaging include:

- Adequate barrier should be used – Plastic film must be checked for its oxygen permeability. A good target is to use a barrier material transmitting <15 cc of oxygen/M2/24 hours or less.
- Hermetic seals are essential – Non-hermetic seals reduce shelf life by using up oxygen absorber capacity prematurely.
- Package geometry – The package must be designed so as to allow free circulation of air around the product.

It is recommended that application tests with actual materials and equipment be conducted before using and specifying FreshPax. This includes determining the water activity of the product as nearly as possible, the packaging and distribution environment conditions, and specifications of the packaging film.



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