PACKAGING…SIMPLIFIED.

One-Way Degassing Valve

Technical Fact Sheet

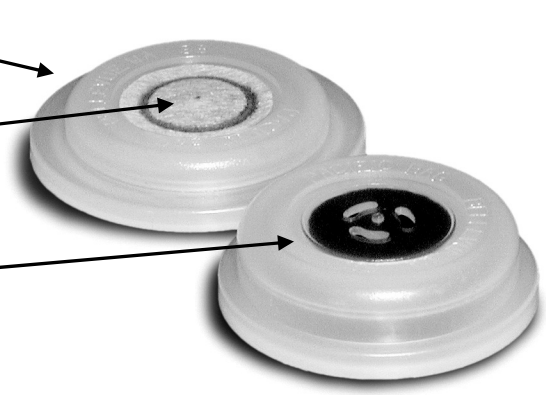
One-Way Degassing Valves are designed to allow pressure to be released from an air-tight package while preventing air from getting back into the package. Air, especially the oxygen (O_2) portion of air, can have negative effects on the package contents and its freshness.

FEATURES

Valve Body
Attaches to the air-tight package and supports the rubber disc and filter.

Filter
Prevents small particles from clogging the one-way valve.

Rubber Disc
It adheres or "seals" to the valve body via a layer of oil. This creates an oxygen-proof seal.



APPLICATIONS

The most common application of the one-way degassing valve is for fresh roasted coffee. Fresh roasted coffees emit large amounts of gas (CO_2) for several days after roasting. At the same time, coffee requires protection from air to maintain its fresh roasted taste. A coffee roaster must seal his coffee in a package that will (1) not allow air to enter the bag to spoil freshness, and (2) will allow the CO_2 emitted from coffee to escape out of the bag.

The bags shown in the pallet above include the PBi valve, which allows entrapped air to escape; thereby creating a stable pallet.

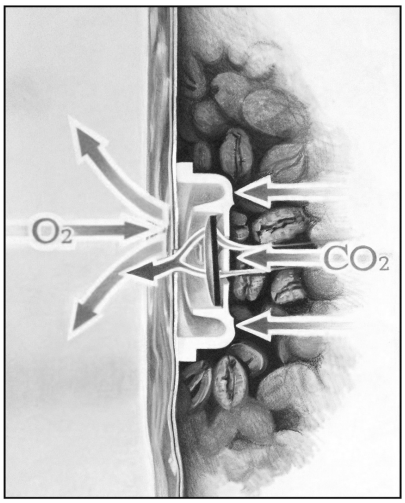
The one-way degassing valve was invented to meet this need (i.e. it allows release OUT, but not IN). Provided the one-way valve functions properly, roasters can:

a) Package coffee immediately after roasting,
b) Allow "degassing" in the package,
c) Minimize oxidative degradation of fresh roasted coffee, and
d) Extend shelf stability

Another application for the PBi valve is for the release of entrapped air for stacking and producing stable shipping pallets. (See picture on left) Examples include large flexible packages for pet food, animal nutrition, plastic resin, and agricultural chemicals.

PBi One-Way Degassing Valve

HOW DOES IT WORK?



Open/Release Mode
Drawing by Thomas Vandenberg, 2007

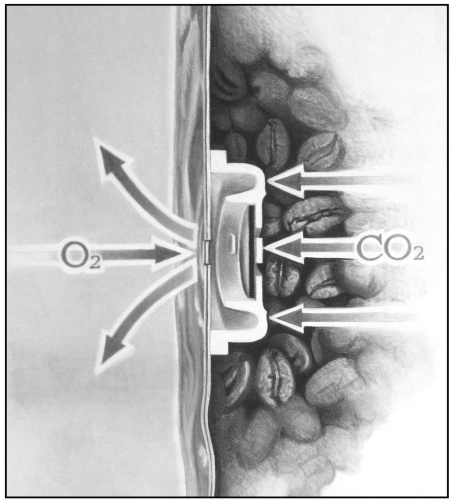
Open/Release Mode
(Releasing CO_2 Emitted From Coffee)

This drawing is a cross section of a premade coffee bag with a one-way valve in the open/release mode. When pressure inside a sealed package increases beyond the "valve opening pressure," the seal between the rubber disc and the valve body is momentarily interrupted and pressure can escape out of the package.

Air-Tight Closed Position

In this drawing, the CO_2 pressure released from the fresh roasted coffee beans is low; therefore the valve is closed. This closed valve has an air-tight seal.

Hermetically Closed Position
Drawing by Thomas Vandenberg, 2007



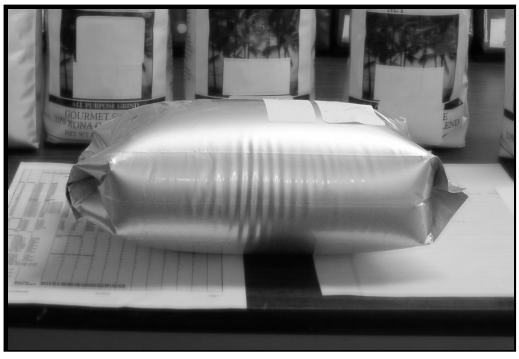
PBi STOCK VALVES

PBi testing conducted at a third party facility confirmed there are many one-way degassing valves on the market that do not work as one-way valves. In fact, these valves allow unacceptable levels of oxygen in the coffee bag. (*See technical study: Performance of Pacific Bag One-Way Degassing Valves vs. Other Leading One-Way Degassing Valves.)*

Functioning One-Way Degassing Valves share the following characteristics:

1. Barrier to Oxygen – This is the valve's ability to prevent oxygen from penetrating through it. The valve must prevent oxygen penetration in order to protect oxygen-sensitive products inside a package. This quality is measured by the percent of oxygen ($\%O_2$) in a package after a time of storage.
2. Open and Close Pressure – The valve must open at some low Opening Pressure or packages will become over-inflated ("puffy") or burst. The valve must close at some lower Closing Pressure in order to prevent oxygen penetration. The valve must open and close repeatedly over time.
3. Flow Rate – Gas must be able to flow through the valve at a rate that is sufficient to evacuate the package as needed for a given application or production environment

Pacific Bag offers two sizes of One-Way Degassing Valves, item numbers 101 and 201, available with and without the filter. The sizes are designed to match with the two most popular styles of application machinery on the market.



The coffee bag does not have a valve. The bag was packaged with fresh, roasted coffee 1-2 days prior to this picture being taken. The pressure built up is significant – creating a balloon! The one-way valve, if utilized, releases the CO_2 while not allowing oxygen to enter the bag.