

DuPont Liquid Packaging Systems Liqui-Box™

DuPont™ FlexFX™ INNER PLY FILM

Objective – increase the integrity of the Aseptic Package in large volume, low viscosity applications



Shipping low viscosity products such as apple concentrate, orange and grapefruit juice and concentrate, diced tomatoes and pureed fruits in bulk bags over long distances can have its challenges. Excessive movement and vibration

can cause problems for bulk bags, resulting in pinhole cracks that compromise the oxygen barrier and possibly breach its asepticity.

Headspace, in and around the bag when it's packed into a bin or drum, allows product movement during transportation. Every movement causes the bulk bag to flex... over and over and over, eventually causing barrier failure – usually in the top shoulder area of the bag, near the air/liquid interface. That means compromised product quality and possible contamination, not to mention bloating from fermenting gases.

Many customers try to minimize this problem with the addition of dunnage or packing. Bubble pads, foam pads and Padloc™ bags, are some of the solutions being used – all solutions which demand extra labor and can increase costs.

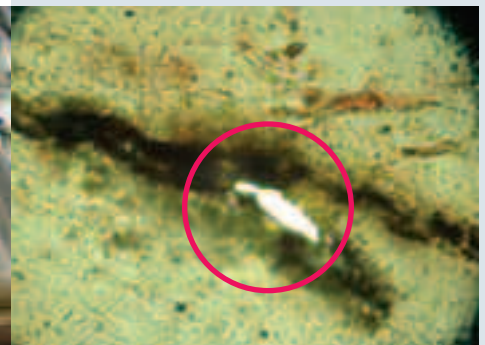
DuPont™ FlexFX™ inner ply film provides a better way. A new bag that reduces flex-cracks and is more thermal resistant too.

Flex-crack is usually found along the top shoulder area of the bag. Flex-crack pinholes can overlay one another on the inner polyethylene plies. If pinholes in the outer metallized-PET laminate ply also occur, the acidic contents of the bag can then attack the metal coating (pictured).



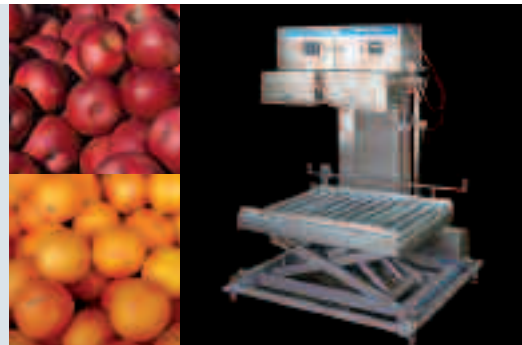
HOW FLEX-CRACKING OCCURS
Depending on the transportation mode, prolonged side-to-side “rolling” of the bagged product, or high impact vibration, causes flex-cracks that can result in small pinholes affecting all layers of the bag. These multiple pinholes allow oxygen and microbes to travel freely, compromising the quality of the product shipped in the bulk bag.

FLEX-CRACK PINHOLE MACRO



The miracles of science™

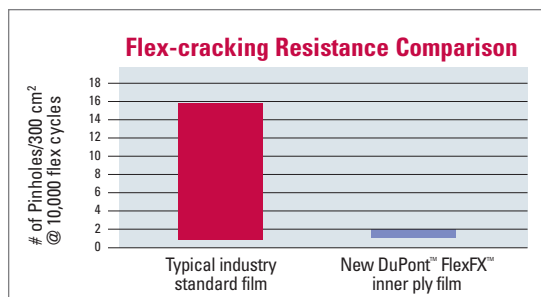
A unique polyolyfin blend gives DuPont™ FlexFX™ its superior flexibility and thermal resistance



The Gelbo Flex Test, a standard ASTM test demonstrated that the bulk bag's inner plies are the key to a superior aseptic bag. We discovered that a bag made with the proprietary technology of a unique polyolyfin blend* offered better flex-crack resistance. Using the same Gelbo Flex Test, DuPont™ FlexFX™ showed a significant reduction in the number of pinholes.

Comparison of Flex-crack Pinhole resistance

ASTM F 392-93
Protocol calls for 2700 cycles max.
Sample was flexed for a longer period to reflect real-life shipping conditions



Improved thermal resistance means less “crocodile skin”

A common occurrence in bulk bags is the unsightly buckling that sometimes forms on the outer layer of the bag when the elevated temperatures necessary for the sterilization and filling process cause the film layers to stick together. The improved thermal resistance of DuPont™ FlexFX™ reduces this sticking and wrinkling. Only the unique DuPont™ FlexFX™ inner ply film can combine these two valuable industry benefits – better thermal resistance and less flex-cracking.



The new DuPont™ FlexFX™ bags promise to deliver some significant savings to bulk packagers

When you're shipping long distances, the use of dunnage to reduce the headspace and minimize movement of the bag within its shipping container can cost from \$1.50 to \$4.00 per bin for material, plus labor. The possibility of reducing or eliminating the need for dunnage on these large overseas and long-distance shipments has the potential to deliver significant savings.

Put DuPont™ FlexFX™ to the test

Let your business benefit from the new DuPont™ FlexFX™ inner ply film technology. Contact your local sales representative and find out more about the advantages of shipping a better aseptic package.

*Patent pending



DuPont is the 2005 recipient of the International Association for Food Protection's Black Pearl Award.

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