

FLEXIBLE PACKAGING

APPLICATIONS FOR BEVERAGE POUCHES

*Including The Invention Of
Flat Pack SqueezyStraw™ Dispensing Pouch
And
Stand Up SqueezyStraw™ Dispensing Pouch*



FLEXIBLE PACKAGING APPLICATIONS FOR BEVERAGE POUCHES

Flexible packaging has had an enormous impact on life in the civilized world, and it is still evolving today. Virtually every home and many businesses have some form of flexible packaging for foods and other valued products.

Yet certain key challenges remain, including some that seem disarmingly simple.

One is the challenge of creating and producing on a high-volume basis a flexible package which contains a beverage or other liquid which a consumer can drink directly from the package with no other tools, fittings, caps, valves or objects required.

We are all familiar for example with kids' juice cartons with attached straws. These are not as easy to use or as cost efficient as flexible packages and they do not have an integral straw or similar structure.

This is the challenge which has intrigued packaging industry veteran Lew Barton for decades. Barton has been consulting on packaging and operations with many major corporations for 20 years. In that time he has been retained by, and worked on projects for, many clients in the food industry including Dow

Packaging, McDonald's Corporation, McCormick & Co., KFC, Reckitt & Benckiser (The R.T. French Company Division), YUM!, Brand Aromatics and Tetra Pak.

Before that Lew Barton was the founder and CEO of Sigma Quality Foods, a producer of single-service condiment packets and other liquid food products for the foodservice industry. This led him to think about this challenge of a flexible container with an integral dispensing tube.

Today Barton has three packaging patents issued and one pending, addressing this subject.

One of his inventions is the:

FLEXIBLE CONTAINER WITH INTEGRAL DISPENSING TUBE

...otherwise known as **SqueezyStraw™ Dispensing Pouch** (see illustration, right), featuring a dispensing pouch with its own built-in, integral sipping straw.



And another new invention from Barton is the **STAND UP SQUEEZYSTRAW™ DISPENSING POUCH** (see illustration, left), a **totally new technique for producing stand up pouches using thermoforming machinery to create triangular prisms.**



But before getting in to those details, it will help to have a general understanding of the evolution of flexible packaging and consumer beverage containers.

THE EVOLUTION OF FLEXIBLE PACKAGING MATERIALS

The modern forms of flexible packaging materials developed rapidly during the 20th Century, as initially paper, with adhesives, was used for wrapping and sealing products. Waxed paper also became popular, making heat sealing possible for the first time.

Cellophane™, which was originally invented in France and first produced in the US by DuPont, was basically transparent paper, but heat-sealable versions were created. The first sealable coatings on Cellophane™ were nitrocellulose, and later Saran™ (PvDC) was developed, making that product a popular and widely used flexible packaging material.

Intensive research and development in all fields occurred during the World War II period, and many of the polymers that are used today were developed in their initial forms at that time. Polyethylene (PE) became the single most widely used resin due to its broad range of applications. PE film was produced by "blowing the bubble" – in other words PE resin was heated and pressure fed into an annular die until

molten, and the film coming up from that die formed a bubble which was then drawn up through a cooling tower. Adjustments in the die opening, specific pneumatic pressure and mechanical propulsion determined the gauge of the film and the speed with which it was blown.

PE was also cast into film, in which case the die was flat and the film was force-fed through the die by heat and pressure to form a uniform sheet, the size of the die width.

Further, PE was extrusion coated, in which case a die, such as used in cast applications, would be mounted above the base material or substrate, and the PE would be extruded directly onto the substrate.

Applications for PE grew exponentially, as well as variations of PE from its original homopolymer to include copolymers with EVA (ethylene vinyl acetate) and EMA (ethylene methyl acrylate), as well as acid copolymers such as EMAA (ethylene methacrylic acid) and ionomers such as Surlyn®. All had significantly improved performance characteristics compared to PE.

Rapid expansion of the technology produced many products that were laminations and extrusions, giving us today a plethora of materials to choose from to match the packaging application.

CONSUMER BEVERAGE TRENDS

Convenience is the keyword in consumer goods today. The consumer has shown a willingness to pay a premium for packaging that delivers convenience. Easy-open, pre-portioned, ready-to-use, microwavable (dual-ovenable), etc. – all of these features have proven to be popular with consumers today.

Much has been written about the lifestyle changes that have occurred since World War II, and these changes have propelled the marketing of products to address consumer demands.

Beverages have been among the products that have been subjected to the most dramatic of these changes. Bottled water for personal use was virtually unknown in this country 40 years ago. Commercially produced and packaged iced tea was also a new category. Bottled coffee products, energy drinks, juice blends, and other beverages have all added to the multiple choices consumers have.

Alcoholic beverages have also seen big changes. There are today many more niche brands in beer and spirits than have ever existed before, as well as pre-made drink mixes.

Today's marketplace is a virtual bazaar of goods that cater to every facet of the consumer demographics, in product, flavor, type (caf or decaf, gluten free, etc.), color, country of origin and dozens of other micro-options.

Add to this proliferation of products the wide variety of convenience packaging for these beverages, and you have an almost unlimited number of possibilities.

And possibly the single most important aspect of convenience packaging today is single serve, personal use, individual portions.

The size of such a package depends on the product. We are all familiar with single serve packets of ketchup. The use there is generally considered to be fractional ounce portions (1/2 oz., 11 gram, etc.).

Beverages are another matter and as such the general paradigm seems to be approximately 3 ounces. It is this category that SqueezyStraw™ Pouch is focused on.

The 3 oz. (+/-) beverage pack has been marketed in many versions and packages, all of which leave a great deal to be desired.

For example, the juice box is expensive, awkward to handle and, depending on the specific style, either difficult or inconvenient to use. The juice box also requires a very substantial capital investment in machinery and equipment. In one type the user is required to open the gabled top, usually a difficult task, in order to acquire a clean and accessible opening, and then either use a straw (sometimes supplied separately) or a cup.



In another form there is a pre-punched hole covered by a film or foil in the top of the box into which a pointed straw (usually affixed to the package) is inserted, puncturing the hole and allowing the user to drink the contents through the straw. This form adds to the cost by three factors: 1) the cost of the straw, 2) the cost of affixing the straw to the package, and 3) the cost of the hole punch and the additional film or foil covering the hole.

Another version of the juice box uses a rigid plastic fitment with a cap on it. This version is even more expensive due to the cost of the parts (fitment and cap) plus the cost of installing those parts into the juice box.

The **rectangular pouch pack** is an alternative to the juice box (see illustration):

But again the issues are cost and convenience. This type of pouch, generally produced on equipment that indexes the packages horizontally while they are oriented vertically, almost always requires the same additional parts (straws, fitments, caps, etc.) as the juice box. As such the cost is relatively high.



The SqueezyStraw™ Dispensing Pouch Solution.

Having surveyed the market, and using the knowledge he acquired through years of experience in the packaging industry, Barton invented the ultimate package for this purpose, **the SqueezyStraw™ Dispensing Pouch.**

First, due to its all-film construction with no additional parts, the SqueezyStraw™ Dispensing Pouch is **ultra-low cost** (more details to follow).

Secondly, using **horizontal thermo-form / fill / seal equipment** for this application is a new and unique method that produces packages with great seal integrity and high volume at low cost-per-unit manufacturing figures.

The cost is so low that it has been suggested that this new technique may have great potential for delivering water and other critically needed liquid food products to countries and populations that are in serious need of such help but the current costs are prohibitive.

The Stand Up SqueezyStraw™ Pouch is a new and patented technology that brings significant benefits and values to users of stand up pouches. Stand Up pouches are useful in applications where the package contains enough content volume so that the user may want to set the package down between sips. The following illustrations show examples of such applications for the Stand Up SqueezyStraw™ Pouch.



In this illustration of Blueberry Yogurt in the new Stand Up SqueezyStraw™ Pouch, the value of the packaging is evident insofar as the user can see and enjoy the yogurt (blueberries and all) without the need of a spoon or a cup or other accessory device.

In this case, due to the viscosity of the product and the inclusion of the particulates (the blueberries), the Stand Up SqueezyStraw™ Pouch will work better, as shown, without the optional internal straw segment.

The pouch can be sized for the usual 5 oz. yogurt serving, and the approximate cost for that package (flexible packaging material plus royalty) would be approximately 4¢ each including royalty on volumes of 50 million pouches a year.



This very important illustration above compares the Stand Up SqueezyStraw™ Pouch to the conventional gable-top paper carton for the popular 8 oz. milk serving (illustrations not to scale). As can be easily seen, the Stand Up SqueezyStraw™ Pouch can be used without the need for a straw, cup or other accessory item. Also, when empty the Stand Up SqueezyStraw™ Pouch will require much less space in the disposal system (it will collapse, while the carton will remain rigid in its original form). The Stand Up SqueezyStraw™ Pouch is made entirely of low-cost, light-weight, flexible packaging materials so it will cost less. Our initial research indicates current market costs for the paper carton at about 6¢ each, including machine lease payments per cycle, and our estimate for the Stand Up SqueezyStraw™ Dispensing Pouch is about 4¢ each, including royalty, based on 50 million pouches a year.

See the website, www.squeezystraw.com for more information. See especially the APPLICATIONS section of the website for more applications.

FURTHER DATA (FAQ)

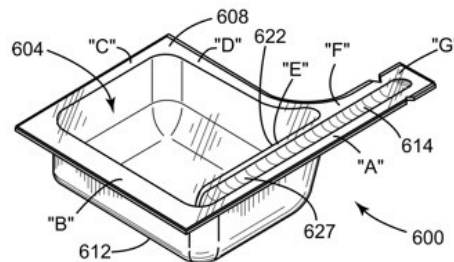
- 1) HOW WILL THE CONSUMER USE SQUEEZYSTRAW™ POUCH? WILL THERE BE AN EASY TEAR FOR CONSUMERS TO OPEN IT?

Yes, the straw extension can be made with an easy-open feature such as a tear notch or a laser score. The ease of use is a major benefit to consumer use. There are no other parts or pieces for the consumer to add or handle – no separate straw, no cap to take off, etc.

- 2) HOW DOES SQUEEZYSTRAW™ POUCH WORK AND HOW IS IT MORE BENEFICIAL THAN OTHER OPTIONS OF DRINKING THAT ARE AVAILABLE IN THE MARKET?

SqueezyStraw™ Pouch works simply by opening the top of the external straw extension, squeezing and sipping the enclosed liquid (see drawing at right, which includes an illustration of the optional inboard straw extension). The major benefits are ultra-low cost and ease of use.

FIG. 6



- 3) WHAT WOULD BE THE FILLING METHOD – HOW TO FILL IT? WILL THIS BE CAPABLE OF HOT FILL PROCESS?

Yes, SqueezyStraw™ Pouch, both flat pack and stand up pouch, are capable of hot fill. The packaging method is to use horizontal thermoform/fill/seal equipment, such as supplied by Multivac and others.



In this case the pouch is first formed on a horizontal bed, then filled by a liquid filler and sealed and die-cut into shape.

4) WILL ANY FORM/FILL/SEAL MACHINE BE CAPABLE FOR THIS POUCH?

As long as the machine is a horizontal thermoform/fill/seal machine equipped with die-cutting capability, and tooled for the unique SqueezyStraw™ Pouch patented configurations, it should be capable of producing SqueezyStraw™ Pouches under license from us. Contact us if you have questions.

5) HOW IS THE LICENSE GOING TO BE PAID?

An initial licensing fee of \$25,000 per application is due at contract signing. After that royalty fees will depend on size of package and volume of production, i.e., the royalty fee will be US\$/unit. Typical for the pouches shown here will be US\$.005 (1/2 cent) each in volumes of 50 million pouches a year.

6) HOW MUCH WOULD A TYPICAL 3 OZ. FLAT PACK SQUEEZYSTRAW™ POUCH COST TO MANUFACTURE?

Here are our current estimates, based on U.S. flexible packaging material costs, for a 3-oz. pouch, printed on face panel, in volumes of 50 million pouches / year:

- Packaging film cost estimate: unprinted US\$ 0.15/mil/MSI.
Printed + US\$ 0.20 / MSI for print.
- Typical 3-oz. size (3-3/4"x 4-1/4") plus straw extension, print face panel, estimated cost of pouch only: US\$ 0.02 (two cents each)
- Additional costs: Licensing & royalty fee, production costs, product (beverage etc.) cost, and other details.

7) HOW MUCH WOULD THE CAPITAL COST FOR THE PACKAGING MACHINERY BE?

This type of machinery is available from several suppliers such as Multivac (www.multivac.com). They range in price from approximately \$500,000 to \$1,000,000 depending on volume requirements.

For example, Multivac estimates that their large machine is capable of producing the 8 oz. Stand Up SqueezyStraw™ Pouch shown in the photo at 300 to 400 a minute (depending on product viscosity).



8) IS THERE ANY WAY TO PRODUCE SHORT-RUN, LOW VOLUME PROTOTYPE SAMPLES FOR TEST MARKETING PURPOSES?

Multivac has a test packaging facility that can produce low volume runs in a semi-automatic fashion. There are some costs associated with this (such as a custom forming tool, the film, labels, etc., plus the machine time charges when applicable). Call the Barton Group to discuss this in greater detail.

For more information about SqueezyStraw™ Pouch and how to license this technology, contact:

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Or visit our website: <http://www.squeezystraw.com>