

### AQUEOUS BLISTER COATINGS = PRINT/COAT IN-LINE USE!

Talk about a market change over! It wasn't too many years ago that the blister card market was dominated by solvent based blister card coatings. Not only has the blister card market grown by leaps and bounds, but the dominating solvent based blister card coatings have been replaced by aqueous blister coatings. Additionally, what was formerly exclusively an off-line post print, second pass roller coating business has yielded more and more to higher productivity, in-line, print/one bump coat production. Litho printers have for some time eyed the blister packaging market wanting to participate totally, and now they are.

#### ***What's made the difference?***

The availability of low VOC, aqueous blister coating formulations that can be effectively wet trapped in one bump, in-line on sheetfed offset press tower and blanket coaters, has made the difference.

#### ***What are blister packages anyway?***

Blister packaging or carded packaging are those familiar forms of packaging that feature a thermoformed product containing blister cell that is heat sealed to a printed coated card. The key components are then, a printed/heat seal coated paper-board card backing, and a thermoformed flanged transparent plastic container (cell), which is called a blister. It's called a blister because the plastic container actually looks like a blister as it rises above the backing board in its sealed finished form.

Fold over cards are another form of carded packaging utilizing the same components of blister packaging, but in a slightly different way. Here, a printed card is backside heat seal coated. A die-cut opening is cut into the card which conforms to the shape of a flanged two sided thermoformed blister product container. In package forming, the card is hinged and folded over itself to overlap the flanges of the blister cell. In this position the entire card is heat sealed together, capturing the product containing blister.

#### ***What's responsible for blister packaging growth?***

Importantly, carded blister packaging offers both the consumer and the merchandiser an effective tamper proof form of packaging. Secondly, the package can be pin racked in space that demands the self-service shoppers attention. It uniquely offers improvements in product shelf life, while offering protection against dust, moisture, breakage, and infestation. All of this while providing product visibility and evi-

dence of any tampering. Carded blister packaging has proven to be a popular form of packaging that continues to grow in volume of usage.

Blister heat seal coatings are a key component of producing functioning blister pack and foldover card packaging. An effective heat seal coating must be activated at low temperatures since the sealing heat is usually driven from the backside of the blister paperboard, which is an insulator. At the same time, the blister coating must not block during die-cutting or when cards are stacked awaiting use. Hot, humid warehouse and transport conditions have been known to cause blocking problems. Blister coatings must also maintain good seals under the stress of weighty contained products when extremes of heat and cold are encountered during distribution and retail merchandising.

#### ***What is blister board?***

Blister board is specially produced solid bleached sulfate (SBS) paperboard stocks of low density that are designed to provide good fiber tearing bonds when effectively heat sealed to a plastic blister cell. Blister board stocks are print side clay coated (C1S) to accept various forms of printing and heat seal coating. Recommended stocks for foldover cards are clay coated on both sides (C2S). Board caliber typically ranges from 16 to 24 pt. The use of stocks other than blister board can result in bonds that are not fiber tearing or are weak failure prone bonds.

Plastic thermoformed blister (cells) are the product containing portion of the blister card or foldover card package. The type of plastic chosen for thermoforming blister cells must be compatible with the total packaging process. The plastic first of all must be transparent with excellent clarity for the packaged product to be displayed and viewed for purchase. The plastic must accept thermoforming, be flexible and yet rigid enough to take distribution. It must adhere effectively to the heat seal coating at temperatures that produce effective fiber tearing bonds without cell deformation. PVC is the material of choice (75-80%) currently for thermoformed blister cells. Some styrene and cellulose are also used. Thickness is said to range from 7.5 - 10 mil. The use of recycled plastics must be carefully watched because of the possible presence of silicone or other contamination which can be responsible for bond failures.

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Heat sealing is defined as a combination of temperature, time and pressure, where standard conditions would be in the range of 350F-375F ,50-60 PSI, and 2-3 seconds dwell. Typically, sealing of a paperboard blister card and the plastic blister cell is accomplished by conducting sufficient heat through the paperboard card from the backside. Paperboard is an insulator, which means that the thicker the stock, the higher the temperature and dwell must be to raise the temperature of the blister coating to a seal effecting temperature. Some sealing is done by techniques that induce heat from the plastic cell side.

Aqueous blister coatings are based on urethane or acrylic chemistry. Both product types are enjoying success in either off-line or in-line applications. Urethanes, developed first, enjoy a greater market penetration, but acrylics are making in roads. Acrylics overcome some of the problems urethanes have such as: viscosity loss over time and the need to agitate during use.

Aqueous blister coatings may be applied by off-line roller coater or other printing press in-line blanket coating devices. Critical to in-line success is the ability of the coating equipment to apply the recommended blister coating dry coat weights.

Blister coating manufacturer dry blister coating coat weight recommendations must be followed if fibre tearing seals to blister board are to be consistently produced. These recommendations may vary by manufacturer and coating formulation.

Blister coatings must be effectively dried to a tack free state before coated blister board is stacked to avoid blocking. Low pile temperatures must be the rule, remembering that these coatings are heat seal coatings that reactivate when heated. While fiber tearing bonds may require that a blister coating/blister, board/blister cell interface reach a temperature of 200F-210F, blocking may occur at much lower temperature, humidity, and pressure conditions.

Inks used on blister packaging must be selected to be free of waxes, silicones, or other agents that might compromise the adhesion of blister coatings. Inks should also be formulated considering that they will be exposed to heat sealing temperatures. Fold over cards represent the worse case scenario since heat platens make direct contact with the printed surfaces of the card.

In-line one bump applications of aqueous blister coatings continue to grow as more sheetfed litho printers realize the potential. Traditional blister card and fold over card suppliers are leading the way, but new suppliers are coming on stream too.

**LOOK TO CORK!** for advanced polymeric blister formulations specifically designed to run one bump in-line, or as traditionally run off-line on roller coaters.

**LOOK TO CORK!**..... for your coating and varnish needs, for both **aqueous** & **UV/EB** coatings/ and varnishes.