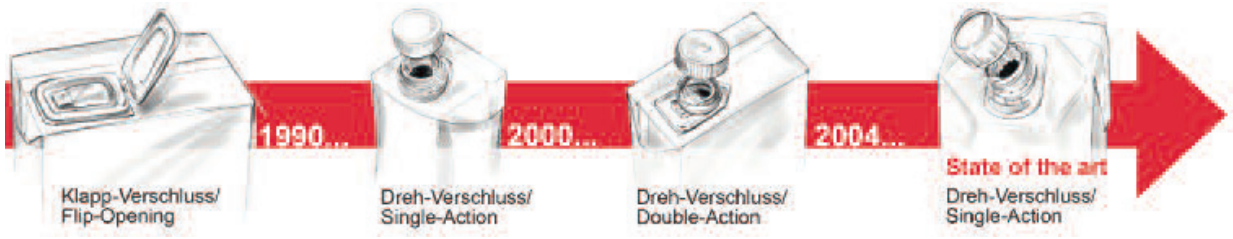
CAP, STRAW, END-OF-LINE
ALL THAT'S WANTED IS A GOOD BOND CHALLENGING AMBIENT CONDITIONS FOR ADHESIVE MANUFACTURERS

Beverages not only come in endless flavours, they are also supplied in many different packages, and especially the carton units for liquid beverages come in endless varieties of shapes. This is where the adhesives used play a very important role.

Straight Straw - U-Straw - Telescope-Straw - Jowat AG bonds all varieties of straws

It may be that the consumer behaviour has become more demanding over the years, in accordance with the different group of buyers and their and situation in life, but two factors remain crucial at all times for every version of package: the perfect appeal and the practical handling of the goods. A major factor of influence for these two aspects is the performance capacity of the adhesives used. In addition to the raised expectations of the end consumer, the entire beverage market is characterised by global growth, tough competition and the nec-



Grafik: Zeitliche Entwicklung der Öffnungssysteme von Getränkekartons

essary increased production efficiency resulting from this. Additionally, we find a huge variety of diverse packages and a consumer behaviour that differs widely around the globe. This market has accelerated in complexity and dynamics, and this applies equally for the respective adhesive applications, especially the carton packages.

These carton packages and their additional components – caps and straws – are undergoing fast changes in design and functionality. Good examples for the increased complexity can be seen in the very different container contents, the various package geometries and the manifold packaging materials.

For bonding caps, straws and secondary packages, the adhesive manufacturer has to respond to challenging conditions, not only in the manufacture but also during the transport and storage of the beverage cartons.

Adhesive systems

Thermoplastic hot melts have for a long time been the answer to the requirements from manufacture and logistics. A few years ago, the polyolefin-based adhesives, a relatively new product family, came on the market. Due to their excellent processing characteristics, they are gaining increasing market shares.

The modern PO adhesives of the Jowat-Toptherm® series were conceived as specialists for each specific application. Stable in the melt, minimal odour formation and nearly colourless in processing, and a high green strength are the outstanding properties of this product group. The excellent flexibility at low temperatures and wide adhesion spectrum also with minimal grammages applied are additional features.

Speed and small bonding surfaces.

The bonding of caps and straws have the same basic requirement: They need to be attached to the beverage carton at line speeds that are constantly accelerated. This requires adhesives with a high green strength, the major prerequisite for safe and flawless downline processing.

Challenging conditions in production (like heat, cold, water etc.) need an adhesive which will remain unchanged when exposed to these kinds of stress. An optimum bond must still be guaranteed when hot filling is followed by chilling, and this means that stretching, shrinkage and condensation water will accompany the bonding process.

Over the past years, not only the line speeds have accelerated, but the number of different materials on both sides of the adhesive has also multiplied. Foil materials laminated to the carton, caps with different application substrates, or straws in diverse shapes and foils, require high-tech adhesives with a wide adhesion spectrum.

Cap bonding

Not all caps are equal, and the endless variety which is standard for this application is not found elsewhere. Adhesives had to match these many different caps and application methods for many years. No matter if the caps are of the flip-open or twist-off variety, whether the formats are standard, premium with very special shapes, with or without headspace – all closing systems for beverage cartons are matched by the safe and universal adhesive partner, Jowatherm® 250.00. This hot melt adhesive can of course be used for applications with direct food contact (according to FDA 176.170 and EU 10/2011).

One specialty: Jowatherm® 250.00 is supplied in pillows. Pillows are highly processor-friendly and have many advantages compared to blocks: They are easy, clean and time-saving in their handling, since the manual removal of blocks from the silicone paper is no longer necessary, also making any considerations of contamination by this paper and of its expensive disposal obsolete. The risk of splashing and possible burns while refilling the melters is clearly reduced. The pillows also ensure an even and fast melting process with minimal cooling down of the melt. This adhesive system has been tested and is approved for the cap applicators of the well-known leading companies on the market.

Jowat-Toptherm® 256.05 als Granulat. (Quelle: Jowat AG)

Straw bonding

Another example for the growing demands in the process of beverage packaging is the attaching of straws to portion packs. When feed speeds are high and ambient conditions are challenging (cold, moisture), very different materials also have to be bonded with high green strength to ensure safe downline processing. There are, however, additional factors to make this a highly complex production step. Just like the beverage cartons, the straws (telescope, U-straw, straight straw) and their foil wraps (OPP, aluminium etc.) come in enormous varieties of shapes, sizes and surface structures.

On the way to the consumer, the straw bonding on the individual portion packs has to also withstand extreme stress conditions and must remain fully attached while running through the subsequent packaging, transport and handling processes, where high mechanical impacts are exerted. In the course of the packaging process (conveyor belt transport, multipack assembly by shrink foil wrap, tray packaging and pallet sorting), the attached straws are constantly exposed to pushing, shaking and swiping impacts. This is where a powerful adhesive can show its superior strength and reliable reproducible bonding results.

Straw attaching to portion packs - this means a lot of applications expertise in bonding on minute surfaces. The response to this adhesive challenge is provided by Jowat AG with its modern PO hot melt adhesives: the Jowat-Toptherm® family, with an outstanding example, Jowat-Toptherm® 256.05. All adhesives from this series offer excellent adhesion on the most diverse substrates with a high green strength, and in consequence an efficient straw attachment.
The Jowat-Toptherm® products meet the regulations concerning packaging of food under EU guideline 10/2011 and the FDA requirements.

Secondary packaging and transport of the beverage cartons

When high-quality cartons are manufactured with surfaces that are difficult to bond, for example coated papers, water-repellent Kraft liners and lacquers, the demands on the adhesives multiply again.
This is where the polyolefin (PO)-based adhesives have again proved their powerful and flexible character. Jowat-Toptherm® 256.50 has the respective adhesion spectrum and a higher heat resistance, and can replace the combination bonding that was the standard so far (hot melt and dispersion adhesives).

However, attention must also be paid to the forces which the bond has to withstand later on during transport and storage of the packs, respectively of the pallets. The stress exerted on difficult substrates, with high mechanical impacts on the entire compound (due to belt conveying, shrink foiling, packaging in trays, and truck or container transport), requires a superior strength and solidity level of the adhesives as well as a high flexibility.

Conclusion:

The purchaser is expecting a package that is perfect in design and handling, with components that match the product promise of a pure enjoyment of a beverage.
Whether Pak or block, cap, straw or end-of-line - the tried and proven Jowat adhesives have for many years fulfilled these requirements and continue to do so.
Perfect bonds increase production security, product quality, and customer satisfaction.