



Market forces put pressure on lamination adhesives manufacturers

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The lamination adhesives market in Europe remains an important growth market due to the increasingly demanding requirements of the packaged food industry and the emerging consumer markets of eastern Europe. But countering that are raw material cost pressures which are a direct consequence of the steep oil price increases in 2005, which manufacturers have been unable to fully pass onto their converter customers.

To assess the impact of these costs and the structure of the European market, *The Strategy Works (TSW)* has interviewed the five key players face to face: *Henkel, Rohm and Haas, Coim (Novacote), Bostik and DuPont*, to gain their perspective of the market. In addition, a range of key converters across Europe have been interviewed to understand customers' current needs and requirements.

Market size

Based on industry estimates, *TSW* calculates the volume of the total European market at 63,500 tonnes, split by major manufacturer as shown in figure 1.

What is encouraging is that the market is growing by up to 5% a

year, according to 44% of the converter sample interviewed; indeed 24% regard it as growing up to 10% a year. Food dominates the applications for lamination adhesives (90%+), generically known as »flexible packaging«. The other major application is pet food, with pharmaceuticals cited by some as growth niche sector.

Two companies between them have two thirds of the market, but *Henkel* (34%) are now recognised as the market leader, having grown organically and then boosted their share by the acquisition of *Sovereign* in 2004. In contrast, the other leading brand *Rohm and Haas* (33%) have lost marginal share, because of their focus on water based technology, which has not taken off in Europe to the extent it has in the USA.

The systems

Indeed, the »bird may have flown« in Europe for water-based, because converters who wish to reduce their emphasis on solvent-based adhesives have a straight choice. They have to decide whether to purchase solvent-less machines, which cannot run with water-based technology, or to convert their solvent-based machines to water-based. Industry opinion is that the majority of converters have already made

the investment in solvent-less machines, meaning that the market for water-based is simply no longer there.

To reinforce this point only 28% of the converter sample interviewed stated they purchase any quantity of water-based products vs. 88% for solvent-free and 84% for solvent-based. Solvent-less systems are now widely believed to be the major sector with estimates ranging between 55-60%; solvent-based is the second largest segment at between 40-45%; and water-based is barely 1%.

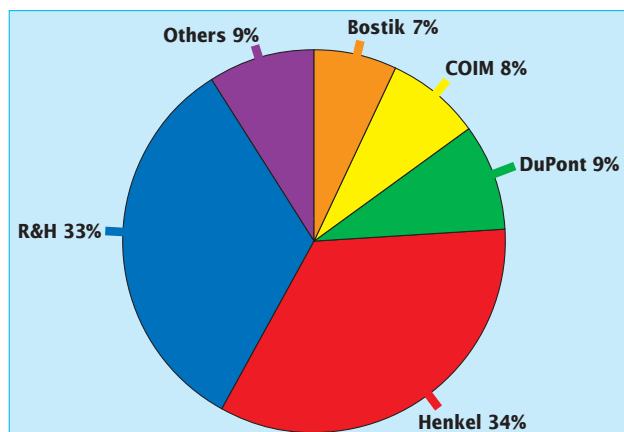
Solvent-based adhesives, although decreasing overall, are increasingly being used for high performance applications (retort & medical). Solvent-less are replacing solvent-based in medium and low technical applications, because it is more economic and reduces environmental risks. Potential applications for water-based are limited to the lower end of the market, which is a further inhibiting factor on revenue growth, because the margins are lower.

This twin appeal of solvent-less is endorsed by a leading converter in Denmark »70-80% of the machines we have run on solvent-free adhesive. The decision was mainly due to environmental issues, but there was also an economic reason too as it takes less adhesive and we can run the machines faster«.

JEAN-FRANCOISE LE CAM, responsible for the European flexible packaging business for *Bostik*, believes solvent-based will continue to be in demand: »Solvent-based for general purpose will decrease, but the need for high performance, high technical requests still grows so the solvent-based product always has a good reputation.«

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Figure 1:
Lamination adhesives market.
Market size 63,500 tonnes.



THOMAS OFFERGELD, Global Marketing Director of *Henkel*, views solvent-free as »more economic«. He feels water-based is an »intermediate technology« for converters with no access to solvent-free lamination technology. Indeed, *Henkel* claim that water-based systems require 15–18 times more cost in energy to drive off the water, and solvent-free laminators can be run much faster. So its environmental credentials are not as green as first appears.

Market dynamics

There are over 500 converters in Europe, with Germany and Italy the most important markets, followed by France and Great Britain. The generally accepted view is that Scandinavian markets are declining and Eastern European markets are increasing.

A feature of this market is the tendency for customers to multi-source with 90% of the converter sample interviewed having two or more suppliers. Customers tend to have one lead supplier and then a secondary or even tertiary supplier.

Customers are very demanding, the largest require frequent technical visits (usually monthly) as well as »hands-on« account management. Indeed when questioned about their most important buying attributes, the handling of technical queries came out number one, followed by the balance between price and quality. Generally speaking customers appear satisfied with their relationships with suppliers, which appear to be long standing and difficult to break.

Pricing/Margins

Manufacturers price by sector, and are able to make higher margins in high-end applications such as laminated pouches for coffee and pet food, and the least margin at the low-end applications such as snack food and pasta. »In the North we achieve higher margins than in the South where the pasta is eaten«, comments JÖRG KIEWITT, who is responsible for Northern European sales at *COIM (Novacote)*. The down-side is that the high end requires more technical servicing

and is therefore subject to more indirect costs.

The price increases that manufacturers have faced due to the steep rise in oil prices in 2005 (ca. 20%) have not been fully passed onto converters – probably only about 4–5% has been applied, meaning that adhesives manufacturers have had to absorb most of that extra cost themselves.

The impact of the price increases on the sector is summed up by CHRISTOPHE ANDRE, Business Manager of Packaging and Converting in Europe for *Rohm and Haas*: »It's a challenge, but oil is like a wave going forward and all the products in the line get battered, it takes some time but you get hurt and the prices have increased like crazy, so we will be able to pass only some of that to the customer. In the last 12 months we are talking about a cost increase above 20% and we have passed some of that on in some cases and re-engineered our operations. And surviving as a converter is a challenge«.

This will have inevitably impacted on industry margins and already *Rohm and Haas* have announced that they will close their German plant in Bremen and move production to *Mozzate/I* during 2006. It is also rumoured that *COIM* are doing the same by closing the *Novacote* facility in Germany and moving production to the parent company in Italy.

So how do the major players shape up against each other technically?

COIM (Novacote)

The primary capability of *Novacote* is Polyester-based technology, as a result of the relationship with its parent *COIM* a manufacturer of Polyester polyol. These are used for one and two-component adhesives, both solvent-based and solvent less, for flexible laminating adhesives. »We also need high product resistance and therefore our solvent-based adhesives are influencing more of the business for pet food application«, adds KIEWITT.

Novacote believe there is a future for faster curing solvent-based systems with high product resist-

ance, allowing the converter to supply laminated products faster to the supermarkets.

Bostik

The *Purbinder* range of adhesives are reactive Polyurethane adhesives for film and foil laminating. The solvent-based adhesives withstand the rigors of retort applications in food packaging. *Bostik* solvent-free products are especially designed to provide low cost production at high speed, with extremely low monomer content.

Bostik see a need to respond to the demands of customers for products that can be applied at faster speeds, with fast curing a secondary priority to machine running speed. They regard adhesive developments that result in machine speed improvements as a high priority.

DuPont

They claim an advantage on the single component solvent-free sector, with the only moisture curing one pack Urethane-based adhesive for retortable applications. They also claim a technical advantage on radiation cure, which is odour free after cure.

Like all the top five major manufacturers, *DuPont* are backwards integrated – Dr HANS ULRICH HÜRTER – the business manager at *DuPont's* European base at Wuppertal/D explains: »We have one of the biggest resin plants in Europe, being backwards integrated. We have a lot of proprietary resin, the percentage is in the range of 95%. What we buy in of course is the Isocyanates and the Polyether.«

DuPont confirm the demand for faster curing and are spending significant R&D budgets to achieve faster cure. »With the orders becoming smaller they have to be replaced more quickly than before, this is what urges our converters to want shorter and shorter curing systems. This is a technology to enable somebody to be on time every time. We are spending R&D money on becoming quicker and quicker«, adds HÜRTER.

Nanotechnology particles get a lukewarm reception from the in-

dustry: »It's very disappointing, nano particles are very expensive, and improvements we have seen so far are limited.«

Henkel is also sceptical of nano-technology in laminating adhesives, – the particles are expensive and not easy to make. »Right now there is nothing really in the market, nothing spectacular«, says OFFERGELD.

Henkel

Their products are based upon Polyester/Polyether technology, having developed a strong foothold of polyurethanes and, like the other companies, are backwards integrated. *Henkel* also claim to have adopted different route to *Rohm and Haas* and developed *Smartcure* Polyurethane systems.

Henkel feel that savings of time for electron beam and fast cure do not make much sense as it is only a day or so for standard performance applications like snack food and pasta packaging. »We have developed unique *Smartcure* technologies as, even though the adhesive is not fully cured, it's already compliant with food regulations. At the low-end of the market, already after a few days when the chemical performance is achieved, the converter can supply the customer. In such cases I don't think that electron beam or fast cure in general really makes a lot of sense, because you save just a day«, according to OFFERGELD.

This view is supported by a leading UK converter: »The concern for us is not so much with cure time but with fast PAA decay. The Isocyanates will react with chemicals to form aromatic amines as opposed to secondary or tertiary ones. The problem is that these are carcinogenic and can react to foodstuffs. The pressure on us is to have a fast PAA decay which enables us to keep our work at the present level. Because of new legislation, we have to reduce the levels of PAA we're allowed by a factor of 10 which by the time you do the maths, actually works out at a reduction by 2«.

Dr KINZELMANN, Global Product Development Director of *Henkel*, explains how *Henkel* have ben-

efited technically from the *Sovereign* acquisition: »There is an application in the USA – cold seal on the backside and on the front you have the print and an electron beam cured release lacquer for the cold seal. You can do it all in line with no lamination, you have really no waiting time, it's a solvent free process, and the lacquer has a very stable release property, and extremely low migration«.

He adds »The general problem of Polyurethane laminating adhesive – one component of the curative is moisture, also they all contain free monomeric Isocyanates. If these free monomeric Isocyanates have not cured when the package comes into contact with food they can contaminate the food and form an aromatic amine carcinogen. With our technology these free monomeric Isocyanates react first and the moment they have disappeared the adhesive is food compliant«.

Rohm and Haas

Rohm and Haas have Polyurethane, Polyester, and water-based adhesive formulations for flexible packaging applications; acrylic emulsions for pressure-sensitive adhesives; along with a full range of water-based latex emulsion polymers for use in paints and coatings.

Mor-Free, a solvent-free adhesive, is widely employed as a single- and two-component adhesives for lamination of flexible packaging films and foils, or those involving paper or other porous substrates.

Rohm and Haas claim no patented technology and believe all suppliers have access to the same general product portfolio. However, they do claim uniqueness on solvent free ELM products (extremely low monomers) – this reduces period of amine decay down to one day. This improves working capital for converters, and meets EU directives.

Integrated supply

Of course the ink manufacturers would be interested in any market trend towards an integrated supply of inks and laminating adhesives:

CARLO MUSSO, a business unit

leader for *Sun Chemical* in Europe, says: »If we think about the adhesive market, we have the same customers and help make the same end product so we are really linked, but I think in the future we have to work more closely with each other. *Sun* recognises the complexity of the various end uses/requirements and have developed an integrated product strategy to provide product solutions. No one component in the package is independent of the others. Films, inks and adhesives need to interact positively with each other to provide the right packaging »specifications«.

ANDREW BROWN, Product Director Solvent-Based Inks, Europe for *Flint Group*, confirms the potential for a closer working relationship between ink manufacturers and lamination adhesives producers. »Our multifunctional system, is our new development and this has been tested across a wide range of adhesives both in terms of solvent-less, solvent-based. We do work very closely with all of those adhesives suppliers and we do have to adjust our ink to be able to cater to find the right package to fit the right adhesive. The ultimate aim is to find an ink that's going to be tolerant across a wide range of them, because you can't always specify to your customers which adhesive they should use.«

RALF LINDQVIST, Technical Director of *Avanspack Oy* in Norway, is enthusiastic: »I think an integrated supplier would be a good idea. It's always easier to work with one big company and get to know the people better.«

The lamination adhesives market's move towards solvent less systems has created its own technology challenge for ink producers, requiring them to develop new ink solutions. As these markets become increasingly interdependent, they face similar challenges of rising raw materials and new technology introductions – a factor likely to promote closer co-operation between adhesive and ink suppliers.

- www.bostik.com
- www.dupont.com
- www.henkel.com
- www.novacote.com
- www.rohmandhaas.com