Whitepaper: Knowledge Series for Converting Industry

Release Liners -

MPI Release, Evolving Capabilities for an Evolving Market

A White Paper by Steve Odders

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Many Markets - Different Needs

What product is essential for adhesive tapes, labels, decals, stickers and a host of other industrial products and graphic art applications? What product can be made of polymers or paper; and can be flexible or rigid? The answer is not a single product; rather, it is a family – the growing family of Release Liners.

Wherever a removable protective covering is needed, one solution is some type of liner. The specifications vary greatly and are often moving targets as industries and technologies evolve. A good release liner manufacturer has the knowledge and relationships to rapidly bring together the three factors in the equation: adhesive manufacturers, substrate producers and chemical suppliers, to develop the right solution to meet a customer's unique requirements.

MPI's High-Speed Polytype Thermal Coater with inline printing capabilities.

This is why a release liner manufacturer like MPI Release must be agile and responsive.

Steve Odders, MPI's Director of Sales and Marketing, notes "MPI does not have a fixed product line. In our business nearly every new customer needs a customized solution. Our success is dependent on our ingenuity, evolving skill set, and expanding production capabilities. Customization is our core competency."

An Oxford Analyzer used to measure coat weight – part of MPI's extensive testing and research capabilities.

Composites – Form Follows Function

Release liners are in the general category of 'composites' – materials composed of discrete layers or laminations bound together chemically and/or physically. The layers typically include a substrate with one or more coatings. Substrates can be paper-based or polymer-based, with coatings ranging from simple silicone coating to complex chemistries that go beyond silicones and include other compounds.

Each substrate has specific chemical and physical properties that determine its suitability for a specific application. Cost is also a factor (sometimes the determining factor) in substrate choice. Substrates fall into two categories - film and paper.

Substrates used by MPI

1. **Films**

   a. **Polyester (PET)**: Bi-axially oriented film with very high temperature resistance and toughness.

   b. **Low-Density Polyethylene (LDPE)**: Non-reactive, flexible, tough, but breakable (low tensile strength).

   c. **High-Density Polyethylene (HDPE)**: Similar properties to LDPE with higher tensile strength due to less branching of its carbon lattice. It is also somewhat harder and more resistant to higher temperatures.

   d. **Polypropylene (PP)**: A level of crystallinity between LDPE and HDPE, and is known for its durability and color-fast properties. It is opaque but can be transparent when it is bi-axially oriented (BOPP). It is widely used for permanent labels because of it durability, stability, and low cost.

   e. **Vinyl (PVC)**: Another low-cost film, with high durability, and a wide range of flexibility with use of plasticizers.

Fully automated high-speed splitter enables a wide range of width specifications.

2. **Papers**

   a. **Super Calendered Kraft (SCK)**: Produced using alternating chrome and fiber rollers; known for high internal strength but is less moisture-stable than clay-coated kraft (CCK).

   b. **Clay-Coated Papers**: Paper coated with calcium carbonate to increase functionality when wet or used in wet environments.

   c. **Solid Bleached Sulfate (SBS) linerboard**: Very high quality paper produced from bleached virgin wood pulp for high quality graphics.

3. **Hybrid**

   a. **Poly Coated Kraft (1 or 2 side Poly)**: Paper bonded with polymers as a moisture barrier to reduce the impact of humidity and to enhance "lay flat" properties.

Processes to Keep Pace with Progress

The application of coatings, the bonding of composite layers, and subsequent thermal, UV, and EB curing require specialized equipment.

Acquisition of a high-speed 87" (2210mm) Polytype Thermal Coater in 2009, now enables MPI to coat two sides of a web in one pass and to print in-line. Controlled re-moisturization is used on this thermal coater to ensure optimal "lay-flat' properties for paper and board substrates.

This equipment along with its Ultraviolet (UV) and Electron Beam (EB) lines, position MPI as one of the industry leaders for all types of release liners.

Containing Costs: A critical customer need

No manufacturer can afford to use release liners that add significant cost to the end product. This puts

pressure on release liner producers to employ cost saving measures without compromising product quality. Three of the most effective measures are increasing roll width, applying multiple coatings on a single pass, and using the most appropriate substrate for a specific application.

Increasing roll width enables production of more release liner in less time. Time is the critical factor since production equipment has a fixed cost per operational hour. Wider rolls also enable faster time to market - no delays in fulfillment. MPI has the some of the widest coating and curing production lines in the industry, with roll widths up to 87″ (2210mm) and the high speed slitter and re-winder necessary to produce the precise width needed for the customer's end product.

Fully equipped laboratories enable MPI engineers to test material properties and undertake ongoing quality assurance procedures.

The second cost-saving measure is applying multiple coatings in a single pass. Many release products require coatings on both sides of the substrate. Most manufacturers address this need by making two passes through the rolls, applying one coating with each pass. MPI addresses this need through a significant investment in equipment that coats both sides, and can print in-line.

The third cost-saving measure is using the most appropriate substrate. In some cases, traditional substrates (usually paper-based) are reduced in thickness (shaving gauge) - a technique that requires greater care in material handling and processing. A second choice would be the use of a film substrate such as polypropylene or polyethylene. Many of these film-based release products have replaced paper-based ones.

Of course, the bottom line to cost containment is consistent and reliable product performance. Without that, money is wasted in rejects and returns. MPI Release ensures consistent quality through its ISO 9001;2008 quality assurance processes.

Looking to the Future – A Coming Trend

Already more release liner users are moving away from paper to film, saving costs through the whole production process. Film is thinner and stronger resulting in more linear feet of product on the same size roll.

Carefully auditing your current release liner specifications and paying more attention to selection of the substrate in new products, are often overlooked opportunities for improving end product performance and lowering costs. A great supplier of release liners, like MPI, can work with customers to better align the properties of the substrate with the performance actually needed, and develop more cost effective release liners.

About the Author

Steve Odders: Director of Sales and Marketing, is a former Vice President of Loparex Corporation and Douglas Hanson. Steve has been a major force in the Silicone Coated Release Industry for more than 27 years.

About MPI Release

MPI Release, with facilities in Massachusetts and Indiana, is an ISO 9001 registered manufacturer of customized release products. It is dedicated to meeting the needs of all industries and product types. A customer-centric company, MPI's focus is quick turnaround and innovative cost-effective solutions. For more information, visit the Company's website at www.mpirelease.com or call 781-729-8300.