



# Industrial Labeling & Substrates

*Adding value to a performance-driven label market*

**I**ndustrial labels are not show stoppers. The designs are simple, they are usually printed using one or two spot colors, and they often go unnoticed by the general public. But that doesn't mean they aren't important. Sometimes they can save lives.

In 1993, Lancaster Synthesis, a chemical company, shipped an unlabeled drum to Clean Harbors, a hazardous waste storage company. The drum contained explosive sodium azide, but Clean Harbors was not made aware of the contents. Two years later the drum exploded, killing a Clean Harbors employee. A simple identification label could have prevented a tragedy.

A missing label can yield undesirable outcomes, and so can mislabeled goods. In 2001, the National Highway Traffic Safety Administration issued a recall for 485 Europa Gelaendewagen sport utility vehicles. The transmission shifter console was improperly labeled, and according to the recall notice the labeling "could cause a driver to park the

**By Leah Genuario**

vehicle without applying the parking brake, which could allow the vehicle to roll away and cause crash or injury."

Industrial labels don't have to be pretty. But a label does need to work. It cannot fall off, fade, deteriorate or fail in any way that would render it useless. Inks, coatings and adhesives must be permanent. Substrates must resist a number of harsh conditions. Printed words must remain legible. If a label cannot stand up to the task, the outcome could be as serious as financial or human loss.

Industrial labels must be durable, but they will differ depending on the specific performance characteristics that are required for their use. In the case of chemical companies, a label must be chemical resistant. Some industries need a label that is water resistant, others need tear resistance, and others require heat resistance. Scratch resistance and outdoor durability are also important characteristics in some industrial markets.

There are various substrates to meet converters', and ultimately end users', needs. For example, for the hot metals industry, Polyonics Inc. manufactures material that will endure environments up to 1500° F. For outdoor applica-

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**Above: An industrial tag made of DuPont Tyvek**

# Industrial Labeling & Substrates

Photo courtesy of FLEXcon



tions, DuPont Nonwovens Tyvek manufactures Tyvek, which is water, chemical, tear and UV resistant.

Industrial labels are used in a broad variety of markets, but their functions are often similar from one industry to the next. According to Joe Mausar, marketing manager at Chemsultants International Network in Mentor, OH, industrial labels often serve one of three purposes: primary product identification, tracking, or secondary informational, such as an instructional or warning label.

For the purpose of this article, in order for a label to be considered an industrial label, it must meet one of two criteria: It must be “involved in the manufacturing process, up to where they put on a shipping or distribution label,” says Jim Williams, VP and chief technical officer of Polyonics, in Westmoreland, NH. Or it must be on “a product used for three years or more before being disposed of. It’s not a consumable good,” says Michael Paul, product manager of thermal technologies at FLEXcon in Spencer, MA.

## Label construction

Industrial labels are often expensive. The performance characteristics are demanding, and therefore the material cost is high.

“Our products are very expensive compared to paper. We are at the very high end — high temperature resistance, kapton material, all these things are really expensive relative to paper,” says Williams. “We’re talking \$25 an MSI (thousand square inches) versus \$2 an MSI. Someone that is used to converting paper is really nervous when they start hearing those numbers, but the point is that the industrial markets will pay for that.”

Despite the sluggish economy, some end users are upgrading to more expensive materials. “As the cost of polyolefins have dropped over the years, there are companies who are upgrading from paper. The benefits of using films are they are more resistant to harsh environments

and are not prone to tearing. The shrinking gap in price along with durability are making film labels more popular,” says John McNamara, market development leader of the product identification team at FLEXcon.

It is true industrial companies will pay extra for more functional labels. But as in all label markets, there is still a trend to reduce costs, especially by re-examining current substrates used.

“There has been a push in a lot of industries to reduce cost and increase profit,” McNamara says. “People are looking at reengineering their labels and the way they’ve been doing that is to look at labels that may have been over-engineered. They may have used polyester in the past, and now they are looking at applications and saying polyester is really not necessary. We do not need all the functions of polyester.”

McNamara says he sees some converters downgrading from polyesters, and other high end film products, to polyolefins, less durable and less expensive materials.

Others agree. “Cost is reduced in industrial labeling by reviewing application requirements to ensure that the product used is not over-engineered,” says Darren Milligan, marketing director, worldwide durables for Avery Dennison, Painesville, OH. “Avery Dennison has seen fast growth in the synthetic paper product category. Synthetic papers are growing in applications where the label is not required to provide long term outdoor exposure, high temperature or abrasion resistance. Synthetic paper products provide very good tear resistance, chemical and moisture resistance and are a lower cost product.”

Still, given the importance of industrial labels, some end users are unwilling to compromise materials in order to reduce cost. “It’s up to you to know your customer and how important those performance characteristics are,” says converter Mike McDonough, executive vice president for Flexo-Graphics in Butler, WI. “I have some who are unbelievably strict and others who know they need film but they are always looking for something that is a little bit cheaper.”

Besides purchasing less expensive substrates, there are other ways converters can save money. “Converters are developing ways to finish a tag or label in-line versus having an extra converting step when printing is complete to increase their productivity rates,” says Deb Ackerman, marketing specialist for DuPont Nonwovens Tyvek in Wilmington, DE. “Higher press speeds with less waste are important keys to decreasing production costs.”

## RFID, 2D bar codes

Early this year, Michelin announced that it had begun testing tires embedded with radio frequency identification (RFID) transponders. The transponders are specially designed so that the electromagnetic waves can travel through rubber. It is capable of storing far more information than a bar code, such as where and when a tire was manufactured.

# Industrial Labeling & Substrates



*A comparison of one dimensional and two dimensional bar codes, courtesy of [www.barcodeman.com](http://www.barcodeman.com).*

Michelin is one in a string of companies to experiment with RFID technology. And while RFID applications are popping up throughout all markets, it is especially intriguing for industrial companies and for the converters who print their labels.

“There’s undoubtedly an increased interest in RFID, certainly within industrial labeling,” says Paul. “Industrial markets are using RFID for materials tracking, asset tracking and inventory management.”

While RFID is a technology to watch, others feel the road toward RFID acceptance is long. “I haven’t seen solid application takeoff. I’ve been to a number of different conferences and the same questions and challenges still surface every time,” says Christopher Paskey, sales and marketing manager for performance print media at Valéron Strength Films in Houston, TX. “Cost per tag and then standards — those are the two recurring themes that the industry doesn’t seem to have a handle on yet.” (Wal-Mart’s announcement this year that it will require its top 100 suppliers to implement RFID by 2005 — at the logistics level, not yet at retail — has already caused a groundswell in industrial interest in the technology.)

Another tracking innovation to hit the market are 2D bar codes. Unlike one dimensional bar codes, 2D bar codes store information both horizontally and vertically. Because more information can be printed in a smaller amount of space, these bar codes are especially desirable in applications where there isn’t a whole lot of printing room.

“We see 2D printing by thermal transfer applications increasing for Tyvek in the industrial label market. This is a definite trend we see in the future due to the additional information a 2D bar code contains,” says Ackerman.

It is “being used in high cost sophisticated devices

requiring a complete list of components, with serial numbers and manufacturing history for each component,” says Milligan.

## Growth

“In the most general sense, it’s a market area that really at this point is growing based on GNP. As the overall economy grows, the use of labeling grows,” says Mausar of Chemsultants International Network.

While much of the industrial label industry plods along, there are some markets experiencing faster growth.

“Some of the growth areas we see currently are military or government programs. Specifically within the military are security and RFID. Another growth area we see are some segments of the automotive, like the tire labels,” says Paul of FLEXcon. “It is due to past events like the Firestone issue. The manufacturers want to keep track of every tire and its associated frame and VIN number.”

The pendulum has swung in the opposite direction for other industrial markets. As the United States witnesses



*Industrial labels printed on DuPont Tyvek.*

# Industrial Labeling & Substrates

the exodus of manufacturing facilities to other parts of the world, the US industrial label and substrate markets are feeling the impact. Certain industries that were vibrant in the past have now dried up.

"Five or six years ago, we had the cell phone and personal computer explosion, so those were huge markets for pressure sensitive labels," says McNamara.

Things have changed. "Cell phones. Those types of products, the walkie talkies, all that kind of stuff, are all in Asia now. If you have all your eggs in that and not a very big presence over there, you've got problems," says Mike McDonough of Flexo-Graphics.

Many in the industry are recognizing the need to have a presence in Asia. "We're a small company, and we've just opened a sales office in Singapore because a lot of our historical customers are buying products offshore and importing them. They want products to be bar coded so they can keep track of them," says Williams of Polyonics.

And while this migration is dismaying for US businesses whose livelihood depends on domestic manufacturing, experts agree this market will never go away. "Within each niche of industrial labeling the growths are there, customer by customer, compared with pumping out paper labels at ever shrinking margins," says Williams.

## Staying ahead

How can converters stay ahead in the industrial label marketplace? Assuming converters are already printing quality labels, many believe the next step is excellent customer service.

First, converters should be knowledgeable about the products available. "There are different materials, and one material might not be the best for all applications. Printers would get into a rut and use the same synthetic or the same film for all jobs, or the majority of their jobs. They may be shortchanging their customers in not being aware of the materials that are out there," says Rich Witmer, marketing communications manager for Valéron Strength Films.

"There is a wide variety of material. There are tons of different kinds of film. Some may not have the properties that are necessary for the application," says Paskey.

Secondly, converters should offer extra services. "Many

of the large industrial companies are moving more and more toward electronic business. They want to be able to place orders with their label supplier electronically, they want to be able to view label proofs electronically, they want to be able to really handle the entire chain of doing business with their label supplier electronically," says Mausar.

"Those label converters who are most capable are going to be best positioned to deal with this particular market," he adds.

Another way to add value is offering just-in-time inventory. End user Stone Construction Equipment Inc., located in Rochester, NY, manufactures construction equipment. The company's products range from mixers and concrete grinders, to asphalt dirt rollers and lifts.

"Our vendor will come in and do inventory of our products, what we need as far as labels, and will maintain that inventory and print and stock for us so that we're always working JIT. We don't have huge inventories of labels," says Kathryn Reissig, marketing services manager.

Finally, converters must be willing to educate customers on material choices. "Part of customer service is technical training. Now that's particularly true in industrial labeling. Do your salespeople sound like engineers or do they sound like, 'I'm going to peddle you some labels'? Can I solve your problem, or am I going to sell you labels at the lowest price?" says Williams.

End users are looking for advice from experts. "We generally have a pretty good idea of what we want the label to be, but one of the things we look at is [converter's] recommendations for how it's going to adhere. We stick labels to steel, to plastic, to composite fiberglass, to rubber, so there's a lot of things that labels have to adhere to, so what's the best material?" says Reissig.

In order to advise end users on the best material to use, converters must know their customers. Says Reissig, "They need to know how the labels are being used, what the ultimate application of it is. That is really key, because for us, safety and operating instructions for a product are vital. They need to stay. We're in unbelievable environments and it is really, really, important that they understand those environments so that they can give us the best possible product for reliability." ●

