Where the rubber meets the label

Three trends driving innovation in tire labeling

Pity the poor tire label; few labels face a rougher road for survival on the way to the showroom.

Thanks to low surface energy, rough tread patterns and tiny rubber hairs, labels have a tough time just sticking to a tire. Once adhered, they are then subjected to extreme temperatures, humidity and abrasion during transport and storage, which can cause them to curl and peel. Even if these labels make it to the showroom intact, carbon black can migrate out of tires over time, making new labels appear dirty.

As recently as five years ago, these quality issues were of little concern to tire brands. That changed in 2012, when the European Union passed legislation requiring tire labels to indicate energy efficiency and safety features. Other countries currently are considering similar regulations, and with more consumer-focused information on tire labels, expectations for quality and brand appeal have increased, driving a number of significant trends – and innovations — in tire labeling.

1. Auto-dispensing label systems

Large manufacturing plants produce approximately 1,000 tires every hour, amounting to 2 billion tires worldwide each year. Yet more than 90 percent of tire labels are still applied by hand, a labor-intensive job that tire makers are striving to eliminate.

One solution has been to implement auto-dispensing label systems for tire labels. As tires move along conveyor belts, the system recognizes each tire, prints variable product details using thermal transfer onto a pre-printed label and then presses the labels onto tires as they pass.

These auto-dispensing machines boost productivity, but they must perform error free. Something as simple as a flimsy facestock may result in labels that don't stick securely, bringing the line to a halt. Using durable label films, adhesives and top coats optimized for auto-dispensing equipment will help tire makers prevent costly shutdowns.

2. RFID technology

While barcodes are the current standard for tracking and tracing tires, radio frequency identification (RFID) has gained interest as a means to optimize processes and reduce overall cost.

A tread label typically has a barcode for use throughout the supply chain. Some brands also require a barcode in the bead of the tire. This is a permanent label vulcanized into the tire that provides unique serialization — much like a fingerprint — so that brands and manufacturers can track products for quality control.

While barcoding systems have served brands well for many years, RFID offers important advantages:

- **Easier and more reliable reading.** RFID labels are durable, can be read in bulk (some from as far away as 10 meters/12 yards) and do not require line-of-sight to be effective. As a result, they provide for easier and more efficient supply chain management with lower failure rates.
- **Ability to share and update information.** RFID chips are writeable, not just readable, allowing companies to add new information to labels over time. This read-write option is particularly useful in fleet management, the refurbishing market, and for adding marketing options.

Regulatory changes also are driving RFID adoption. For example, in 2015 the United Arab Emirates enacted a law that requires RFID labels for tires to combat tampering, counterfeiting and parallel imports.

RFID labels can be used in tread labels as well as in bead labels, but the vulcanized RFID labels must exhibit excellent durability performance over the lifetime of the tire.

3. Brand appeal

Label quality is critical at every stage of a tire's life cycle, impacting productivity during manufacturing, efficiency during distribution and consumer behavior at the point of sale. If a label is stained with carbon black or is falling off, consumers may perceive a tire as old stock and look elsewhere.

In the past, many tire labels were backed with a layer of aluminum to prevent carbon black from migrating out of the tire and staining the label. While that met the brand appeal demands of a clean, quality label, sustainability and cost issues were deterrents. More recent innovations incorporate a polypropylene label film with a specialty feature that blocks materials from bleeding through the surface of the tire label. Avery Dennison's point-of-purchase tire labeling film won the Label Industry Global Innovation Award at Labelexpo Americas 2014.

Tire labeling made easier

Even in countries where tire labels are not yet required, tire brands expect tread and vulcanizing labels to endure challenging tire environments and provide brand appeal. The key to success is using innovative, high-performing label materials.

Avery Dennison has invested in rigid testing protocols and capabilities to make tire labeling increasingly efficient and cost effective for tire brands. For example, it is now developing a portfolio of durable label films, adhesives and top coats that are optimized for auto-dispensing equipment. The company also continues to customize label solutions to help tire manufacturers take advantage of trends such as RFID technology and shelf appeal.

Labeling tires will never be easy, but brand owners can gain peace of mind by partnering with a knowledgeable label material supplier that can help them tackle the latest trends, regulations and challenges in tire labeling. >

Avery Dennison is committed to developing cost-effective products to meet even the toughest durability challenges. Contact your sales representative to discuss a durable label solution for your tire labels.

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