

Prefilled syringes and injector devices require careful label consideration



Primary drug packaging options are numerous and include vials, test tubes, prefilled syringes, ampoules, injector devices, and durable and prefilled insulin pens. Of these packaging types, the prefilled syringes and injector devices market is one of the fastest growing in the pharmaceutical industry.

Benefits of prefilled syringes

Factors driving the growth of the prefilled syringes market include a global increase in the number of cancer and diabetic patients, as well as improved patient compliance and technology advancement, according to a 2013 report by Transparency Market Research. Benefits of prefilled syringes over other drug delivery methods range from improved accuracy to reduced drug waste to fewer dosing errors.

While vaccines have traditionally been a high-growth area for the prefilled syringes market, a key contributor to the market's double-digit growth is increased demand for conveniently packaged pharmaceutical products, as prefilled syringes and injector devices also offer the ability for patients to self-administer drugs outside of the hospital setting. This advantage is increasingly important with the increase in the number of lifestyle diseases such as type 2 diabetes, for which patients often use insulin pens for self-treatment. This need will only increase, as there will be approximately 438 million diabetic people in the world by 2030, according to the International Diabetes Association.

New challenges for manufacturers

With clear advantages in patient safety, convenience and reliability, prefilled syringes have gained widespread acceptance among pharmaceutical companies and healthcare workers. More than 20 pharmaceutical companies are now manufacturing prefilled syringes for delivery of at least 50 injectable drugs and vaccines, according to a 2011 report by the International Journal of Pharmaceutical Investigation. Pharmaceutical companies in



the U.S. and other regions are also expanding their portfolios internationally and moving from ampoules to unit dose packaging.

To meet growing demand for prefilled syringes and injector devices, pharmaceutical companies are looking for ways to produce these products more efficiently and cost effectively. Increasing the speed on filling and packaging lines is one popular solution, while installing fully automated packaging lines in place of manual processes is another. However, this shift to faster production lines and equipment presents new challenges for manufacturers in terms of product performance, identification and security.

Balancing efficiency with performance

Packaging engineers, label manufacturers and technical consultants are working more closely with pharmaceutical companies to develop labeling solutions that 1) address new labeling challenges for prefilled syringes and injectable devices and 2) protect brands and their end users. Some of the areas now being addressed through label innovation include:

Production efficiency

Two major drivers of production efficiency are increased demand for products and the growth of generic products, which require cost-effective manufacturing solutions. The big challenge for pharmaceutical companies is finding a balance between high-speed labeling and label performance.

One solution is coated glass syringes. Coated glass is often used by pharmaceutical companies to avoid or minimize damage of glass syringes on production lines. These applications benefit from label products with higher initial tack — which can endure faster labeling speeds — and superior adhesion properties to help them adhere tightly around coated glass products. Label adhesives and face stocks with excellent mandrel performance can also be used to ensure labels don't peel up or butterfly at the edges.

Transparent labels moving at high speeds may not be easily detected or correctly identified by a manufacturer's equipment. One solution to faster production lines is using transparent labels that have luminescent inks or coatings. Under UV detection lights, the labels can be identified, allowing companies to remove any unlabeled products, improve safety and reduce inventory loss.

Label solutions that may have worked in the past could now result in chemical migration, security issues or incompatibility with equipment.

Patient safety

Syringes contain liquid medicine, which can be exposed to dangerous chemical contamination from label adhesives, inks, coatings and varnishes that migrate through the container. Pharmaceutical companies using plastic packaging or containers must pay even more attention to the risk of label migration, which is higher for plastic substrates. By working with label material manufacturers, these companies can not only evaluate the performance of a label adhesive but also of its migration potential, ultimately choosing low-migration adhesives for their plastic syringes and injector devices.

Convenience

Physicians or facilities using prefilled syringes and injector devices may require duplicate peel-off labels. These labels help healthcare providers accurately track drug batch numbers and important medicinal information as devices travel from place to place.

Due to the nature of peel-off labels, it is possible to lose or misidentify drug information if labels aren't torn cleanly off of the syringe or injector device. Thus, label developers have begun introducing labels with better tear-off properties to ensure that a straight tear is made and peel-off labels remain intact.

The right label for the job

Prefilled syringes and injector devices are now widely accepted as safe, reliable and convenient methods of drug delivery. But packaging materials, product specifications and production demands for injectable applications have continued to adapt to changing market demand and patient needs.

An ongoing challenge for companies producing prefilled syringes and injector devices is developing innovative packaging solutions for their applications. Label solutions that may have worked in the past could now result in chemical migration, security issues or incompatibility with equipment. However, by providing thorough technical solutions for syringe labeling and label stock, technical consultants can help companies solve this challenge and deliver functional, convenient packaging to the marketplace. >

