AVIENT

MORE THAN MATERIALS

Pharmaceutical & Medical Device Packaging Design

Understanding the advantages of using plastic versus glass

Pharmaceutical and medical device packaging must meet key functional and aesthetic requirements to help provide assurance to physicians, healthcare providers, patients and caretakers that a medicine or device is sterile and prepared for effective use. Many medical packaging applications—including syringes and vials—were historically manufactured with glass, but there has been a turn in the market towards plastic to accomodate customers' application needs.

Medical packaging requires, at a minimum, excellent barrier resistance and clarity. Glass has inherent properties to meet these needs. Plastics, however, meet these key requirements and then some—allowing OEMs and molders to achieve superior impact and chemical resistance, customize coloring and add performance-enhancing additives to improve their product.

In this document, we will outline key benefits of glass versus plastic at a high-level, and make the case for why plastic is the preferred choice for use in pharmaceutical and medical packaging.

GLASS PACKAGING

ADVANTAGES

- **Barrier Properties:** Glass packaging has inherent barrier properties and is impermeable to liquids or medicines.
- **Clarity:** Glass packaging is known for innate clarity, making it advantageous for medical packaging.
- **Temperature Resistance:** Glass performs well in a wide range of temperatures.

DISADVANTAGES

- **Fragility:** Glass is prone to breakage, particularly during transport and in settings where the application is handled often.
- **Customization:** Glass is not easily customized to meet specific, specialized requirements.

PLASTIC PACKAGING

ADVANTAGES

- **Impact Resistance:** Plastic packaging, both rigid and flexible, is extremely durable.
- **Chemical Resistance:** Certain plastic chemistries are inherently chemically-resistant. Other chemistries can be formulated to match very specific levels of chemical resistance, as required by the application.
- **Versatility:** Plastic packaging allows for the incorporation of a variety of materials, colorants and additives—and promotes enhanced design freedom in shape or ergonomic performance. Specialized formulations can achieve enhanced performance with additives such as anti-microbial technologies, or meet custom specifications with colorants to meet aesthetic requirements for clarity and color.

DISADVANTAGES

- **Resuability:** Plastic packaging used in medical settings is best aligned with single-use applications due to safety and regulatory standards.

Although glass has historically been the material used in pharmaceutical and medical device packaging, plastic is now the preferred option because of its ability to meet baseline requirements, allow for enhanced performance and offer opportunities for incredible customization.

At Avient Distribution, we can help you solve your toughest application challenges, providing insight into the latest material, colorant and additive technologies, and offering technical and logistics expertise, plus innovative design engineering capabilities. We can work together to mitigate risk, optimize design, and accelerate product commercialization of your medical packaging application.

1.844.4AVIENT
www.avient.com

AVIENT™