

Guide to the Most Common Plastic Resins

Polyethylene Terephthalate – PETE - # 1

This is the most commonly used plastic resin today for beverages, food items and other consumer products. Manufacturer's like it because it is safe, strong, transparent and versatile. Consumers choose it for its safety, shatter-resistance and recyclability. Up to 100% of a PET package can be made from recycled PET, and the material can be recycled again and again.

High Density Polyethylene – HDPE - # 2

This is the most widely used resin for extrusion blown plastic bottles. This material is economical, impact resistant, and provides a good moisture barrier. HDPE is compatible with a wide range of products; including acids and caustics, but it is not compatible with solvents. It is usually supplied in FDA approved food grade. HDPE is naturally translucent and flexible. The addition of color will make HDPE opaque, although not glossy. Adding extra weight to the bottle will yield a rigid container. HDPE can be flame treated so it can be direct printed using silk screen decorating. While HDPE provides good protection at below freezing temperatures, it cannot be used with products filled at over 180° F or products requiring a hermetic seal.

Post Consumer Resin – PCR

This is a blend of reclaimed natural HDPE (primarily from milk and water containers) and virgin resin. The recycled material is cleaned, ground and recompounded into uniform pellets along with prime virgin material to build up environmental stress crack resistance. PCR has no odor but exhibits a slight yellow tint in its natural state. This tint can be hidden by the addition of color. PCR is easily processed and inexpensive. However, it cannot come into direct contact with food or pharmaceutical products. PCR can be produced in a variety of recycled content percentages, up to 100%.

Low Density Polyethylene – LDPE - # 4

The resin is similar to HDPE in composition. It is less rigid and generally less chemically resistant than HDPE but is more translucent. LDPE is used primarily for squeeze applications. LDPE is significantly more expensive than HDPE but will yield a glossy bottle when produced in colors.

Medium Density Polyethylene – MDPE

The resin contains both the characteristics of HDPE and LDPE. Bottles are less translucent than LDPE but more flexible than HDPE. Like LDPE, MDPE is glossy when produced in colors.

Polypropylene – PP - # 5

The resin is naturally translucent and provides contact clarity and an excellent moisture barrier. PP is easily processed via injection molding (jars and closures) and extrusion or stretch blow molding (bottles). One major advantage of PP is its stability at high temperatures, up to 200°F. Therefore, it is used for hot-fill products such as pancake syrup. PP is also autoclavable and offers the potential for steam sterilization. PP has excellent chemical resistance, but provides poor impact resistance in cold temperatures. Oriented PP offers improved impact resistance and clarity at low temperatures. Produced in color PP exhibits a glossy finish.