

## **Blizzard Bag 2 - Plastics**



**Plastics have revolutionized the way we do business, the way we move from place to place, and the way we imagine our world. Devices like cellular phones, laptops, syringes, cars and credit cards all use plastic in their manufacture and were not uneconomical or in some cases physically impossible to make without this malleable substance. Plastic manufacturing varies by product.**

### **Injection Mold**

- The most common and recognizable plastic manufacturing process is injection molding. This process uses thermoplastics and is responsible for many of the consumer products we enjoy today. During the process, the thermoplastic is super-heated and injected into a ceramic mold. The plastic is pressed into the mold and held until cool. Before completely cooled, the mold is removed and the product is finished with paint. This process can sometimes leave a residual line from where the mold parts joined together, like the line found

on a super bounce rubber ball. Injection-molded plastic products include wine bottle stoppers, tubing, refrigerator containers (like the crispener) and children's toys.

## Extrusion Blow Molding

- In extrusion blow molding, the plastic is melted over a mold instead of inside the mold in order to create a uniform shape. The plastic is cooled (by cold air blast or sometimes by spinning) and the mold is pulled out through a small hole in the product called a mold cavity. This process is used by companies to make plastics for intense use, like fuel tanks, auto bumpers and hoses, as well as surf boards and impact-resistant tool cases.

## Thermoforming

- Thermoforming is a much less intense process of manufacturing than injection molding or extrusion blow molding. A large sheet of plastic is heated to the point of pliability. It is then tugged, pulled and lifted into a shape in the same way that a person might model clay. The sheet is left to cool and freeze into the desired position. While this method is less heat-intensive and somewhat less expensive than molding, thermoforming is also a much more limited way to manufacture plastic, since fewer shapes and designs are possible with a semisolid piece of plastic. This method is used for heavy-gauge items like plastic siding, aircraft wind screens and hot tubs.



