ADVANCEMENTS IN PLASTIC RECYCLING TECHNOLOGY

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INTRODUCTION

In this poster we have put up what are plastics and how it is recycled and also the latest advancements in Plastics recycling technology as well as how the plastics recycling process takes place.

Production of plastics is 1.5m tonnes in the year of 1950s now its gone up to a staggering 280m tonnes in 2011. But only few tonnes of plastics are recycled and many tonnes of plastics are under our land surface.

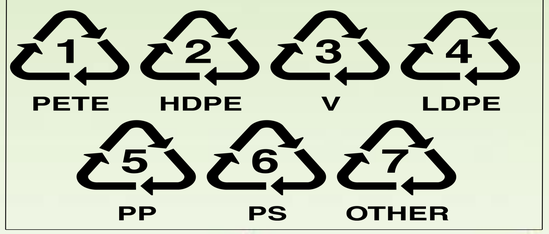
WHAT ARE PLASTICS…?

Plastics are materials that can be molded into required shapes by the application of heat or pressure. Most plastics are derived from organic material, that is, substances made from things that have lived, including oil, cotton, sugar cane, coal, corn and many others. There are however exceptions such as silicone which is derived from sand. At the point of processing plastics consist of granules, pre-formed tablets, powders, syrups or pastes.

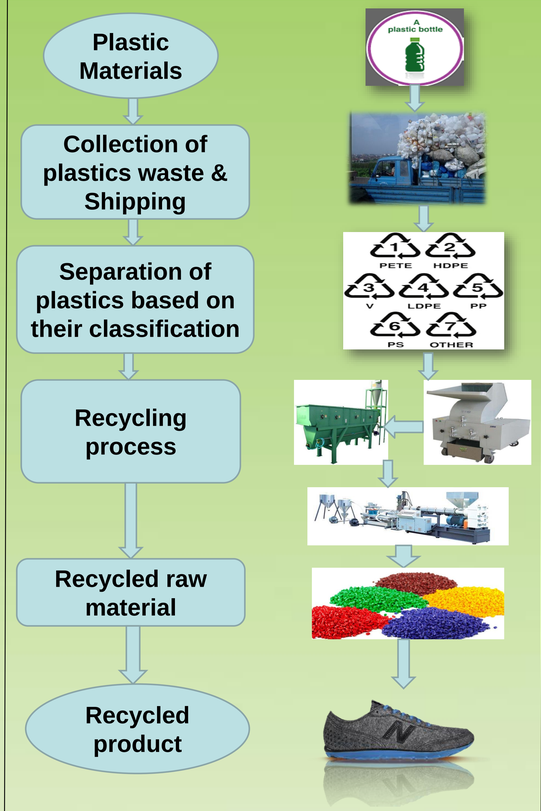
CLASSIFICATIONS OF PLASTICS

Thermosetting: plastics that on being heated and molded set permanently, and thus cannot be re-melted and re-formed.

Thermoplastics: plastics that can be re-melted after molding again and again, and thus can be recycled by melting and reforming.



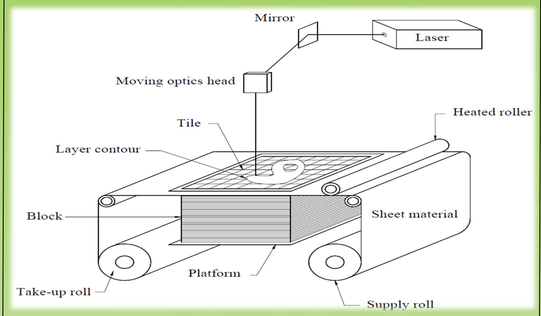
PLASTIC RECYCLING PROCESS



RECYCLED PLASTIC TECHNOLOGIES

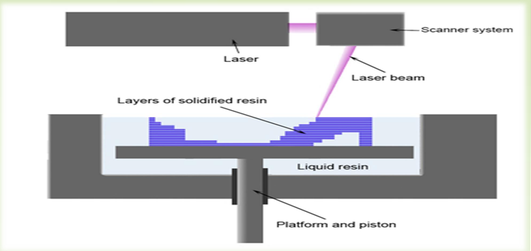
- **Laminated object manufacturing**
- **Stereolithography**
- **Selective laser sintering**

LAMINATED OBJECT MANUFACTURING



Laminated object manufacturing (LOM) is a rapid prototyping system developed by Helisys Inc. In it, layers of adhesive-coated paper, plastic, or metal laminates are successively glued together and cut to shape with a knife or laser cutter. Objects printed with this technique may be additionally modified by machining or drilling after printing. Typical layer resolution for this process is defined by the material feedstock and usually ranges in thickness from one to a few sheets of copy paper.

STEREOLITHOGRAPHY



Stereolithography is an additive manufacturing process which employs a vat of liquid ultraviolet curable photopolymer "resin" and an ultraviolet laser to build parts' layers one at a time.

STEREOLITHOGRAPHY

For each layer, the laser beam traces a cross-section of the part pattern on the surface of the liquid resin. Exposure to the ultraviolet laser light cures and solidifies the pattern traced on the resin and joins it to the layer below.

After the pattern has been traced, the SLA's elevator platform descends by a distance equal to the thickness of a single layer, typically 0.05 mm to 0.15 mm (0.002" to 0.006"). Then, a resin-filled blade sweeps across the cross section of the part, re-coating it with fresh material. On this new liquid surface, the subsequent layer pattern is traced, joining the previous layer. A complete 3-D part is formed by this process. After being built, parts are immersed in a chemical bath in order to be cleaned of excess resin and are subsequently cured in an ultraviolet oven.

PRODUCTS USING PLASTIC WASTE

Don't Litter, it makes the world bitter!

Don't throw your future away!