Plastic Recycling Process

Types of plastic (with code and some examples):

1: PET – bottles

2: HDPE – milk bottles, bags

3: PVC – pipes, detergent bottles, raincoats

4: LDPE – bread bags

5: PP – straws, screw-on lids

6: PS – foam, yogurt containers

7: Others – ketchup bottles

The code numbers are printed within a recycle sign on most plastic containers.

Basic Steps for plastic recycling:

1. Manual Sorting: All non-plastic materials are removed. Plastic is sorted into 3 types: PET, HDPE and ‘others’.
2. Chipping: The sorted plastic is cut into small pieces ready to be melted down.
3. Washing: Contaminants are removed.
4. Pelleting: The plastic is melted down and made into small pellets.

Usually only type 1 and 2 are recycled. Recycled PET is usually used to make threads which are used to make shoes, jackets, hats. Recycled HDPE is used to make durable products like tables, rulers, trashcans, etc. Other types are not recycled due to lack of incentive to invest in equipments required.

More advanced recycling process:

Heat Compression: Takes unsorted plastic in all forms and mixes the load in large tumblers. It has very high energy costs, and not used much. EXCLUDE THIS.

Monomer Recycling: The polymers undergoes inverse of the polymerization reaction which is used during manufacturing. This creates same mix of chemicals that formed the original polymer, which can be purified and used to synthesize new polymer chains of the same type.

Thermal Depolymerization: Melts plastic into petroleum that can be remade into a variety of products.

Biodegradable Plastic: These plastics can decompose in composting plants where it is placed in a heated environment with moisture and oxygen for months. These plants require fuel and water to operate, the decomposed plastic emits greenhouse gas.