Polystyrene (PS)

- Polystyrene is made in a process known as **suspension polymerization**. After styrene is produced by combining ethylene and benzene, it is merged with water and a mucilaginous substance to form droplets of polystyrene.
- It is commonly **used** for food containers, egg cartons, disposable cups and bowls, packaging, and also bike helmets.
- When exposed with hot and oily food, PS could leach styrene that is considered as brain and nervous system toxicant. It could also affect genes, lungs, liver, and immune system.
- On top of all of those risks, PS has a low recycling rate because it is tough to recycle.

Methods to recycle polystyrene

- expanded polystyrene (or EPS), which can be immediately reused and is accepted by some local council plastic recycling schemes.
- There are three common methods for recycling of PP, known as granulation, compacting, and densifying.
- Melt granulation process:
  Melt granulation is the primary method for recovering PS foam, and most of the waste PS foam recovered by this method. Melt granulation recycle polystyrene material at the right circumstances can keep the material with better mechanical

properties, and the American DOW Chemical Company research shows that the use of polystyrene in a number of thermal processing, the average relative molecular mass reduced, a small amount of local molecular chain was broken. There remains 80% strength and elongation at break of 90% after more than five times of recycling.

Polystyrene foam waste sorting, crushing, washing, drying, degassing, extrusion, and granulation. Recycling production of pellets can be reprocessed and shaped into a variety of products.

Waste Styrofoam recycling once made plastic recycling business prohibit with the large volume and high transportation costs of PS foam.

- Compacting:
  Compacting polystyrene is actually the best way to **discard** it. Normal bins can fill up almost instantly with blocks of expanded polystyrene even though the material itself is almost weightless, whereas a compactor will compress polystyrene packaging into dense chunks that are much easier to collect.

- Densifying:
  Densifiers are **used to compact loose foam products into dense blocks for transportation or storage prior to recycling**