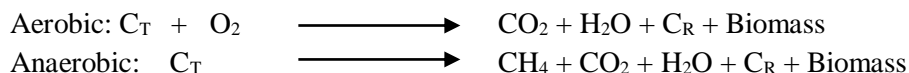


In 1980, biodegradable plastics appeared in existence as alternatives to petroleum-based plastics. Rapid growths of biopolymers and the biocomposite market are being accelerated since then. The crude oil and natural gas prices are increasing with time which will make bioplastics most cost viable with petro-based resin. Therefore, Biodegradable polymers have shown promising potential to replace conventional fossil fuel-based plastics in numerous applications in packaging, especially in food packaging, agricultural and medical field. The biodegradable polymer could be biopolymers, bio-based polymers and petroleum-based polymers. ‘Biopolymers’ originated from plants, animals and microorganisms. ‘Bio-based polymer’ is based on renewable resources whereas ‘Biodegradable polymer’ can be broken down by the microorganisms like bacteria, insects, fungi etc. (Table. 1).

Table: Classifications of Biopolymers

	Biodegradables	Non-Biodegradables
Based on Natural Resources	PLA, PHA	Bio-PE, Bio-PA, Bio-PUR, Bio-PP
Based on Petroleum	PBS, PBAT, PVA	PE, PP, PVC

In addition, the microorganisms release enzymes which break down the polymeric chains of the plastics into the smaller molecular part. Consequently, these small polymeric chains are taken as food by the microorganisms, metabolized and, then, converted into carbon dioxide, water and biomass. This biodegradation process occurs in the presence or absence of oxygen which is known as the aerobic and anaerobic processes, respectively.



Importantly, the biodegradability of plastics depends only on the chemical structure and the physical properties, not on the raw material. The biodegradable made products can be decomposed in an industrial composting facility. These can be degraded in backyard compost or soil, as well. Furthermore, no harmful effect on the environment by using renewal sources while using the products produced by biopolymers. Consumption of bioplastics has numerous benefits such as reducing the dependency on fossil fuels, the necessity of less energy for the fabrication, reducing soil infertility, reducing CO₂ emission, more sustainable, earth-friendly, and non-hazardous. Biopolymers have a broad range of applications For example:

Packaging: Shopping bags, trays, Compostable waste collection bags, tea bags etc.

Agricultural: Mulches films etc.

Medical: Sutures, Staples, Clips, Pins, Screws, Plates, Rods etc.

Gradually, the market size of bioplastics has been growing as the research progress. Thereby, Deep Polymers Ltd offers standard **Biodegradable and Oxo-Biodegradable Polymer** masterbatches and compounds which cover a wide area of applications. They are developed to enhance the performance, properties, processability and stability in the carrier resins and followed all worldwide rules as well (e.g. REACH and RoHS). Our products and their entire ingredient are certified based on present rules and regulations (e.g. ISO 17088:2012/15, 17088:2008).