

Biopolymer Use in Plastic Packaging

APR POSITION on Bio-Based PET, PE & PP Plastics in Recycling: Bio-based conventional plastic resins, including PET, PP, and PE in which the monomers are **at least partly derived from biomass** are chemically and technically equivalent to petroleum-based conventional plastics. These bio-based equivalents are fully compatible with their corresponding conventional, petroleum-based plastics in the recycling process at all levels of use.

APR POSITION on Other Bio-Based and/or Bio-Degradable Materials in Recycling: APR supports innovation in new materials and has recognized the use of bio-based non-conventional plastics in certain packaging applications. However, APR opposes the use of other bio-based and/or biodegradable plastics for packaging intended to be used by the consumer and placed in the residential recycling stream until critical mass levels are achieved that allow for efficient system-wide reclamation. This includes but is not limited to PLA, PHA, PBS, and starch blends. Additionally, all packaging and food serviceware made from these materials must be readily identified by NIR sorters so that they do not get included in today's commercial bales, and be clearly marked with RIC code 7. Unfortunately, at this time, when placed in the residential recycling stream, packaging made from non-conventional bio-based and/or biodegradable plastics materials is most likely to end up disposed to landfills or incineration.

Compostable packaging - Packaging and food serviceware designed for composting must have clear and accurate labeling to differentiate between compostable and recyclable products. For more information on compostable packaging and food serviceware please see the [US Plastics Pact](#) and/or the [International Biodegradable Products Institute \(BPI\)](#).

Bio-based conventional plastics should not be confused with conventional plastics containing bio-, oxo-degradable or other additives intended to degrade plastics. For APR's position on these materials, please refer to [APR's Position: Degradable Additives Use in Bottles, Forms, and Films](#).

Background Information:

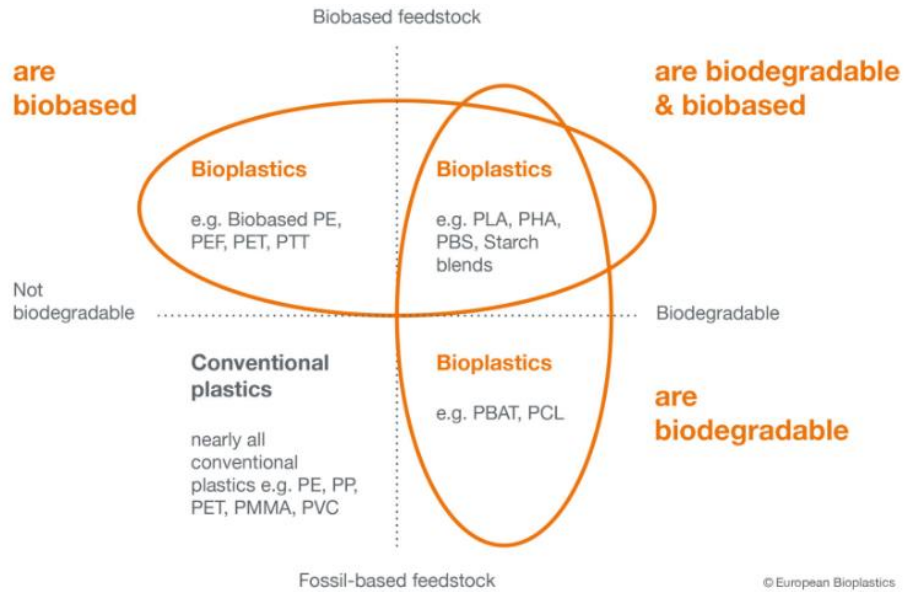
The term Biopolymer is often used to refer to a range of broadly defined materials to include:

- **Bio-based or at least partly bio-based, conventional plastics where the plastic is at least partly derived from biomass (plants). Biomass used for bio-based conventional bioplastics can stem from corn, sugarcane, plant oil and/or other biological waste streams. These feedstocks can be used to make the monomers used to produce bio-based polyethylene (PE), bio-based polypropylene (PP), or bio-based polyethylene terephthalate (PET). The resulting bio-based conventional plastics are chemically identical to their petroleum-based conventional plastics equivalents. Packaging made entirely or partially from these plastics would be coded with the equivalent Resin Identification Codes (RIC) as their petroleum-based versions (RIC #1 for PET, #2 for HDPE, #4 for (L)LDPE & #5 for PP) per ASTM D7611.**
- **Bio-based, biodegradable plastics which are completely derived from biomass and can be broken down to CO₂, water, and biomass by microorganisms under specific environments at end-of-life. These plastics can include some cellulosic derivatives, thermoplastic starch (TPS), polylactic acid (PLA), polyhydroxyalkanoates (PHAs) and polyhydroxybutyrates (PHBs). These plastics have entered the market as replacements for conventional plastics in short-lived products, such as packaging and food serveware and would have RIC #7.**
- **Fossil-based, biodegradable polymers such as poly(caprolactone) and poly(butylene adipate-terephthalate), PBAT. PBAT has entered the market for use in short-lived products, such as packaging and would have RIC #7.**
- **Bio-based or at least partly bio-based, non-biodegradable polymers such as polyethylene furanoate (PEF), some polyamides, polyurethanes, cellulosic derivatives and epoxies that are least partly derived from biomass. Some of these plastics have entered the market in short-lived products, such as packaging and would have RIC #7.**

[European Bioplastics](#) summarizes these families of materials as follows:

Material coordinate system for bioplastics

Bioplastics are biobased, biodegradable, or both.



Source: Institute for Bioplastics and Biocomposites (IFBB) and European Bioplastics (EUBP)

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