



BIOPLASTICS: A brief overview

Bioplastics can be made from renewable sources (e.g. starch, sugar, cellulose) or can be fossil based. Bioplastics can be compostable. However, they can also behave like normal plastics and not degrade in the timespan of a few weeks or months.

An overview of important biopolymers can be found here:

Abbreviation	PBAT	PLA	PBS	Bio-PE	TPS
Name	Polybutylene-Adipate-co-Terephthalate	Poly lactic acid	Polybutylene-Succinate	Bio-Polyethylene	Thermoplastic Starch
Raw material	Petroleum	Starch, Carbohydrates	Petroleum & Carbohydrates	Sugar	Starch
Made from renewable raw material	No (partially possible)	Yes	Partially	Yes	Yes
Compostability	Home & Industrially	Industrially	Home & Industrially	No	Home & Industrially

So you see, for example, Bio-PE is made from renewable raw materials, but is not degradable. On the other hand, PBAT is made from petroleum, but can completely biodegrade. Starch or Thermoplastic Starch can do both, it is biobased, biodegradable and compostable.

If bioplastics claim to be called compostable, they must prove it. To do this, the following three tests must be passed:

- the disintegration of the product in a given timeframe
- the decomposition and rotting to humus with no microplastics being formed
- the non-toxicity of the decomposition products of the bioplastic for plants

Only when these 3 tests have been passed, the bioplastic can be called compostable. The best way to check this is by taking a closer look at the logos on the bioplastic product.

Two major classifications distinguish between **"industrially compostable"** and **"home-compostable"** bioplastics. The difference is primarily the temperature and the time allowed for decomposition and degradation. Other classifications describe, for example, soil- or marine degradability.

	Industrially compostable	Home compostable
Temperature	58°C	20 – 30°C
Decomposition	12 weeks	6 months
Biodegradation time	6 months	12 months

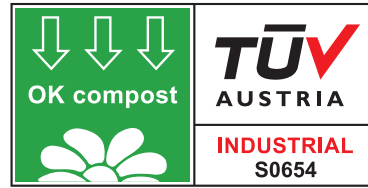


The mark for home compostability can look like:

The word "HOME" on the left side gives an indication that the bioplastic is well compostable at low temperatures.



There are also bioplastics that require higher temperatures to compost, for example up to 60°C. In this case, composting is only possible in industrial facilities. After absolving the above-mentioned three tests, these bioplastics can have the following logos on the product.



AGENACOMP is a bioplastic produced by the Austrian company AGRANA. To a very large extent it consists of technical starch, which is not suitable for food applications and is also used for many other applications such as in paper or in glue sticks. The starch is a locally sourced product and enables AGRANA to produce an excellent bioplastic with very good compostability. Composting closes the cycle between the plant, the starch and the bioplastic, which can be composted to help new plants to grow.

Our bioplastic can help to collect your organic waste (e.g. kitchen waste) cleanly and separately from other waste,

to compost it at home or to dispose it as organic waste. Because such materials are still relatively new, and because many people also dispose conventional plastic films together with their organic waste, compostable films are currently not accepted by every municipality. But even if the bioplastic film ends up in the residual waste and is incinerated, the carbon dioxide cycle of starch is closed.

Unfortunately, there are still no separate recycling options for most bioplastics. However, to date no large quantities of bioplastics are on the market, so that they do not interfere with the established recycling cycle. But if more bioplastics are used, specific recycling routes can be developed more quickly.

COMPOST OUR BIOPLASTIC

4-STEPS

- 1.) **Collect compostable waste** from garden, kitchen and agriculture. Shred garden and tree trimmings. The more diverse and well prepared the mixture, the better the compost.
- 2.) **As the bottom layer take rough material.** Loosely pile up the waste. Mix wet and green waste with brown and dry waste. Put the home-compostable bioplastic film in the compost in single layer. If it is a bag, fill it with waste. Avoid having two layers of the bio-plastic film right against each other. Add some water to it if needed so that the mixture has good moisture.

- 3.) **Cover the compost** with grass clippings and leaves for protection and moisture control. Now molds and bacteria can begin their work.

- 4.) **Implementation:** Every 4-6 weeks, ensure good air circulation and mixing by moving the outer layers into the middle. Also make sure there is enough moisture. When implementing, you can first observe the process of decomposition and later the disappearance of the bioplastic film. The film serves as food for micro-organisms and is converted by their digestion into biomass, carbon dioxide and water.

COMPOSTING OF AGENACOMP (COMPOSTING OF BIOPLASTICS)

HOME COMPOST CONDITIONS (28°C and below)

