



Microplastics, Bioplastics, Biobased Plastics, Biodegradable Plastics

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Washington State University**

Macro-, Micro-, and Nanoplastics

Macroplastic



Microplastic

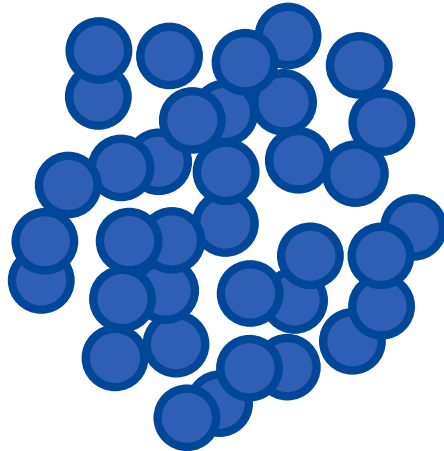


Nanoplastic



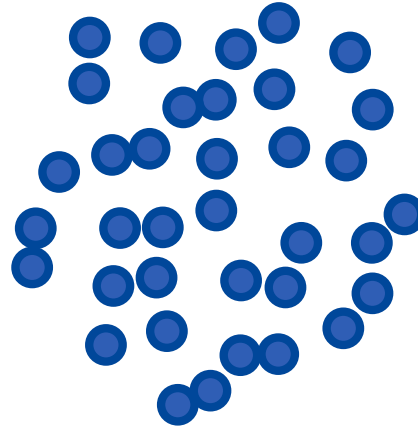
Macro-, Micro-, and Nanoplastics

Macroplastic



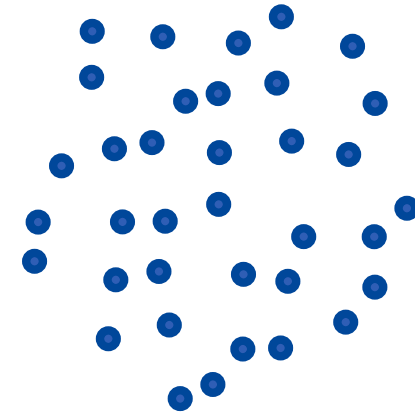
> 5 mm

Microplastic



< 5 mm

Nanoplastic



< 1000 nm

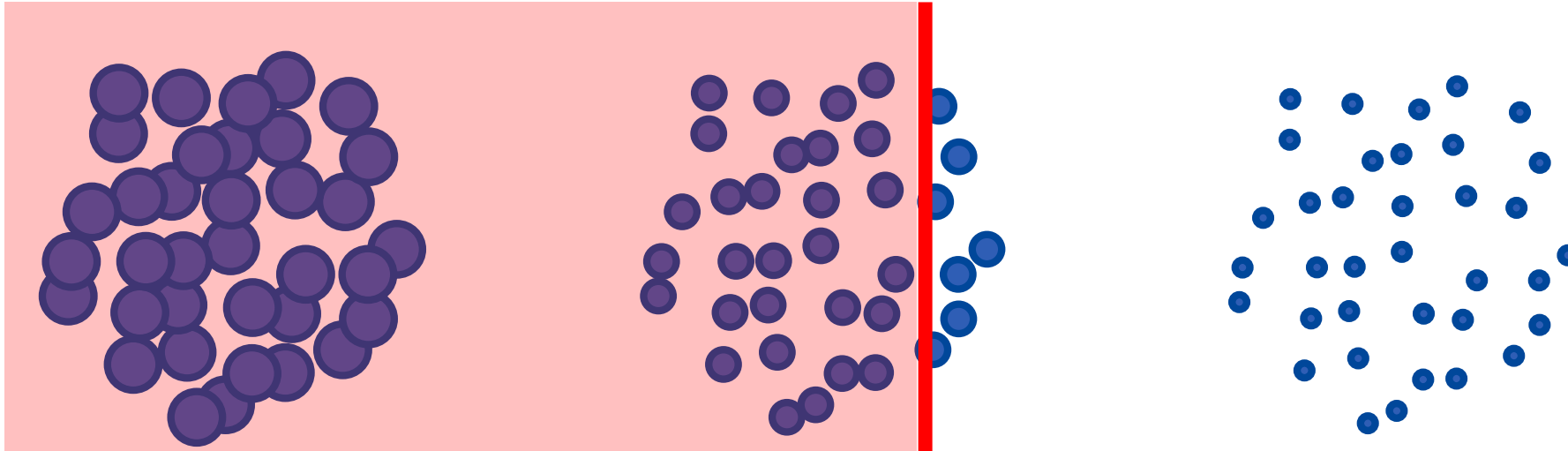
< 100 nm

Macro-, Micro-, and Nanoplastics

Macroplastic

Microplastic

Nanoplastic



> 5 mm

< 5 mm

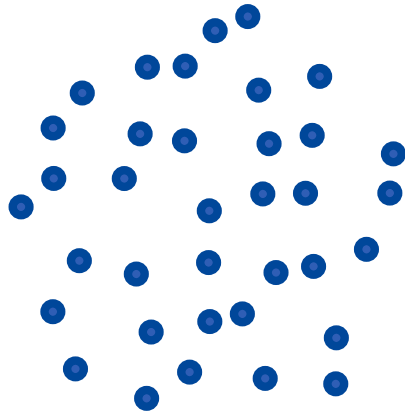
< 1000 nm

visible by human eye: > 11 μm

< 100 nm

Macro-, Micro-, and Nanoplastics

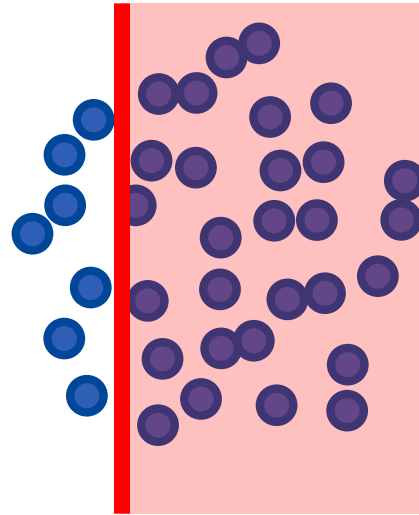
Nanoplastic



< 100 nm

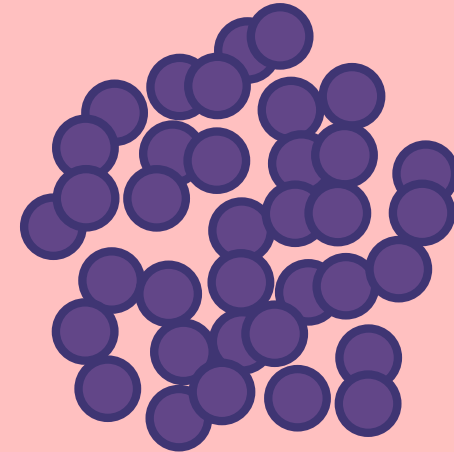
< 1000 nm

Microplastic



< 5 mm

Macroplastic



> 5 mm

visible by human eye: > 11 μm

Bioplastic Terminology

- Bioplastics
- Biobased Plastics
- Compostable Plastics
- Biodegradable Plastics

Plastic

Plastics are *synthetic* or *semi-synthetic* materials made from long chains of molecules called polymers

from the Greek word *plastikos*

“to mold, to form”

Bioplastic

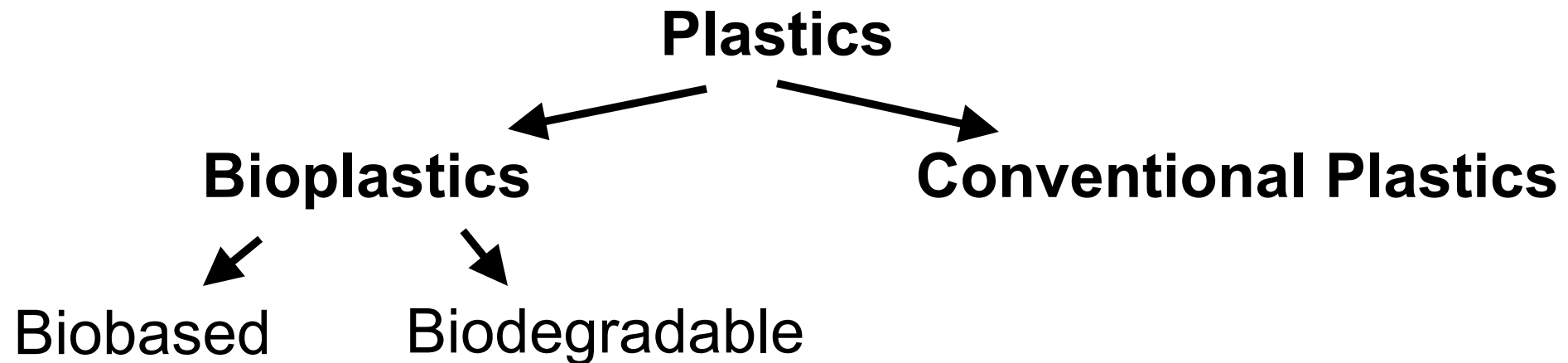
Bioplastics are *plastics* that are:

- **biobased (made from biological sources)**
- **biodegradable**

Bioplastic

Bioplastics are *plastics* that are:

- **biobased (made from biological sources)**
- **biodegradable**



Bioplastic Terminology

biobased

~~=~~

biodegradable

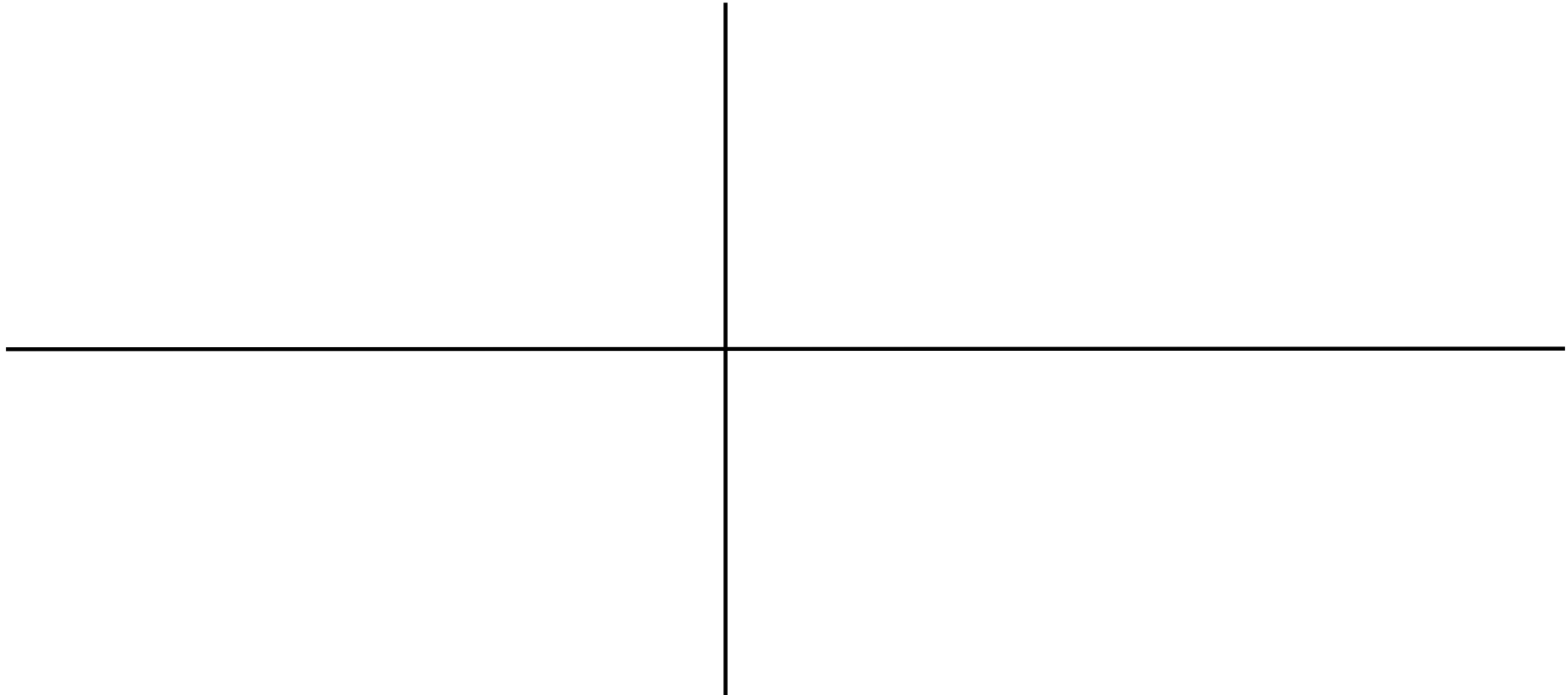
Bioplastic Terminology

non-biodegradable

biodegradable

non-biobased

Biobased



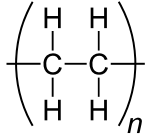
Bioplastic Terminology

non-biodegradable

biodegradable

non-biobased

Polyethylene



Biobased

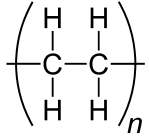
Bioplastic Terminology

non-biodegradable

biodegradable

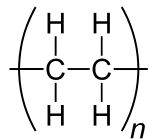
non-biobased

Polyethylene



Biobased

Polyethylene



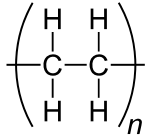
Bioplastic Terminology

non-biodegradable

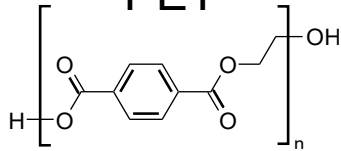
biodegradable

non-biobased

Polyethylene

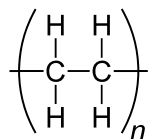


PET

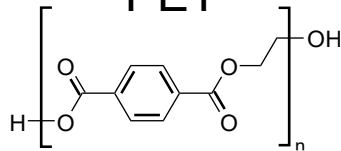


Biobased

Polyethylene



PET



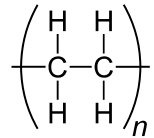
Bioplastic Terminology

non-biodegradable

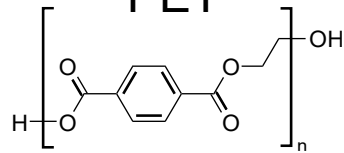
biodegradable

non-biobased

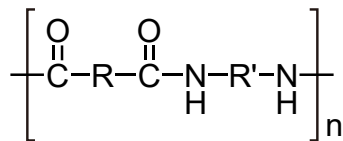
Polyethylene



PET

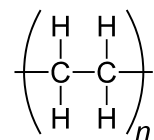


Polyamid (Nylon)

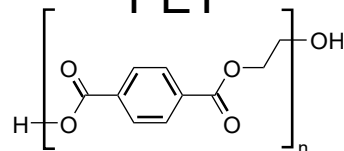


Biobased

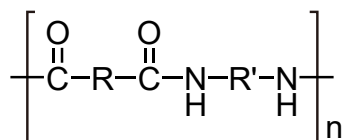
Polyethylene



PET



Polyamid (Nylon)



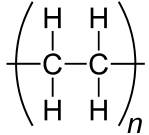
Bioplastic Terminology

non-biodegradable

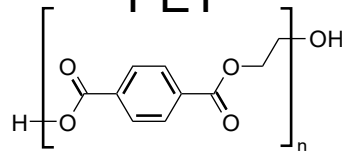
biodegradable

non-biobased

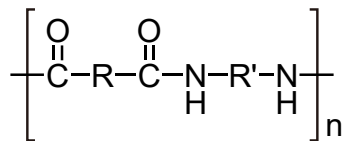
Polyethylene



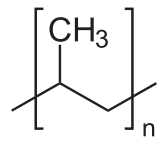
PET



Polyamid (Nylon)

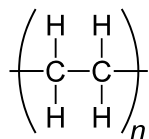


Polypropylene

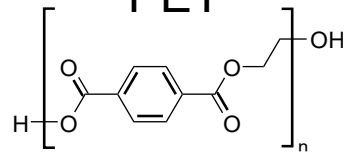


Biobased

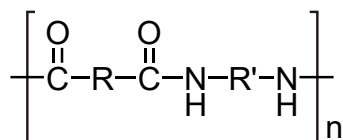
Polyethylene



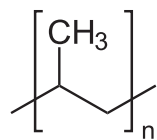
PET



Polyamid (Nylon)



Polypropylene



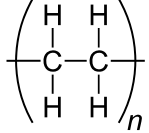
Bioplastic Terminology

non-biodegradable

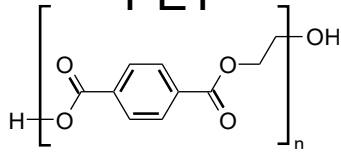
biodegradable

non-biobased

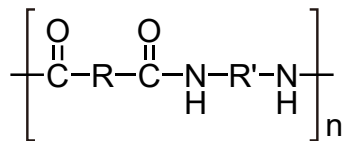
Polyethylene



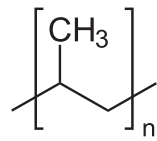
PET



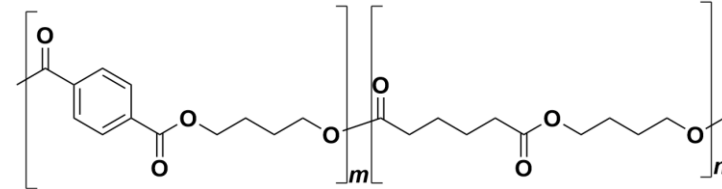
Polyamid (Nylon)



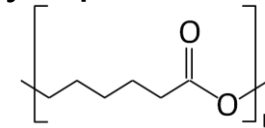
Polypropylene



Polybutylene adipate terephthalate (PBAT)

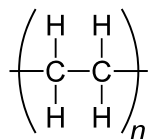


Polycaprolactone (PCL)

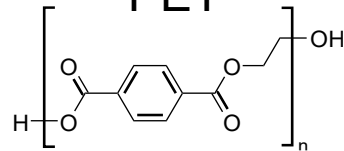


Biobased

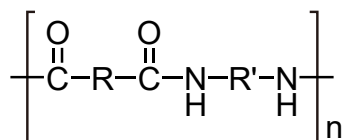
Polyethylene



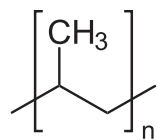
PET



Polyamid (Nylon)



Polypropylene



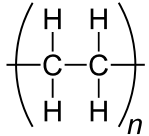
Bioplastic Terminology

non-biodegradable

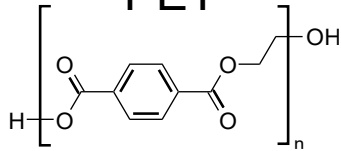
biodegradable

non-biobased

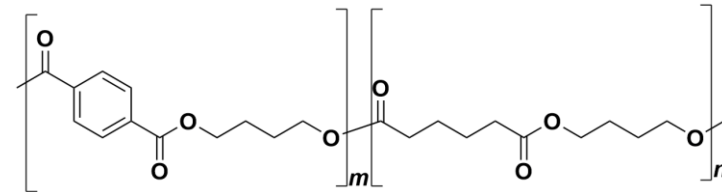
Polyethylene



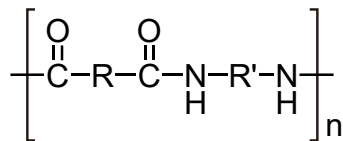
PET



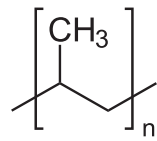
Polybutylene adipate terephthalate (PBAT)



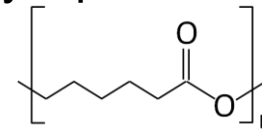
Polyamid (Nylon)



Polypropylene

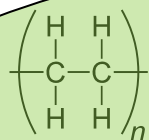


Polycaprolactone (PCL)

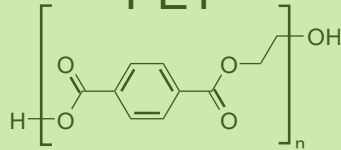


Biobased

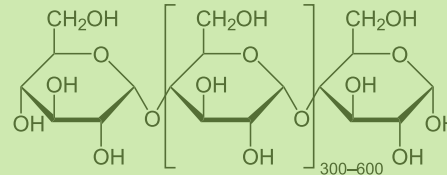
Polyethylene



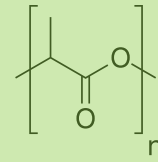
PET



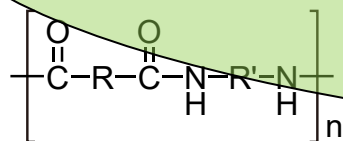
Starch



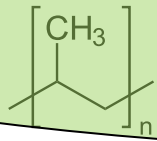
Polyactic Acid (PLA)



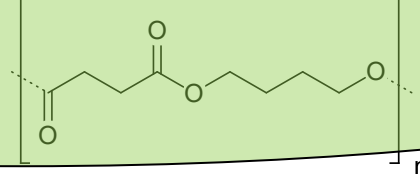
Polyamid (Nylon)



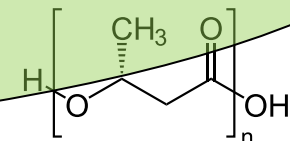
Polypropylene



Polybutylene_succinate (PBS)



Polyhydroxyalkanoates (PHA)



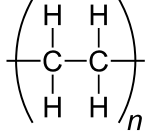
Bioplastic Terminology

non-biodegradable

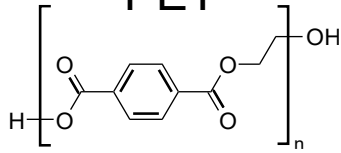
biodegradable

non-biobased

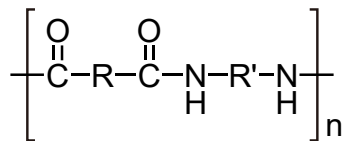
Polyethylene



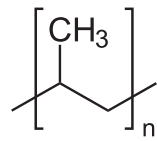
PET



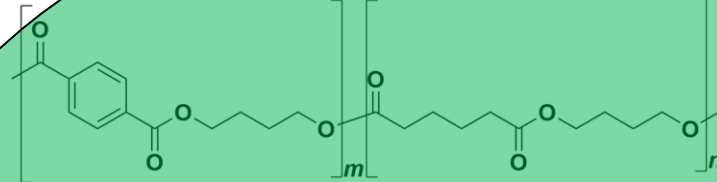
Polyamid (Nylon)



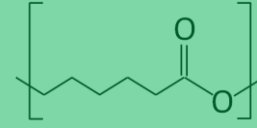
Polypropylene



Polybutylene adipate terephthalate (PBAT)

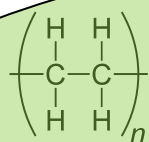


Polycaprolactone (PCL)

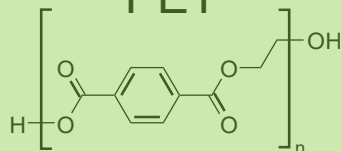


Biobased

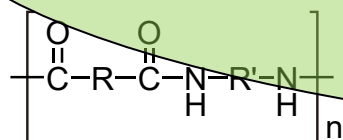
Polyethylene



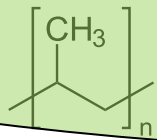
PET



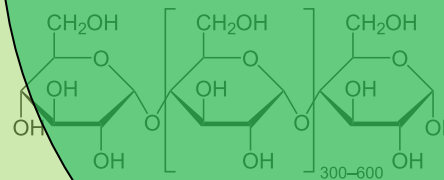
Polyamid (Nylon)



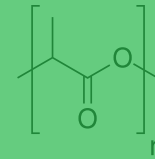
Polypropylene



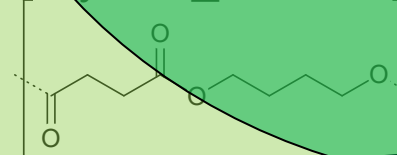
Starch



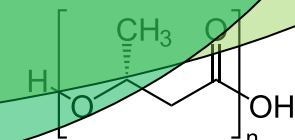
Polyactic Acid (PLA)



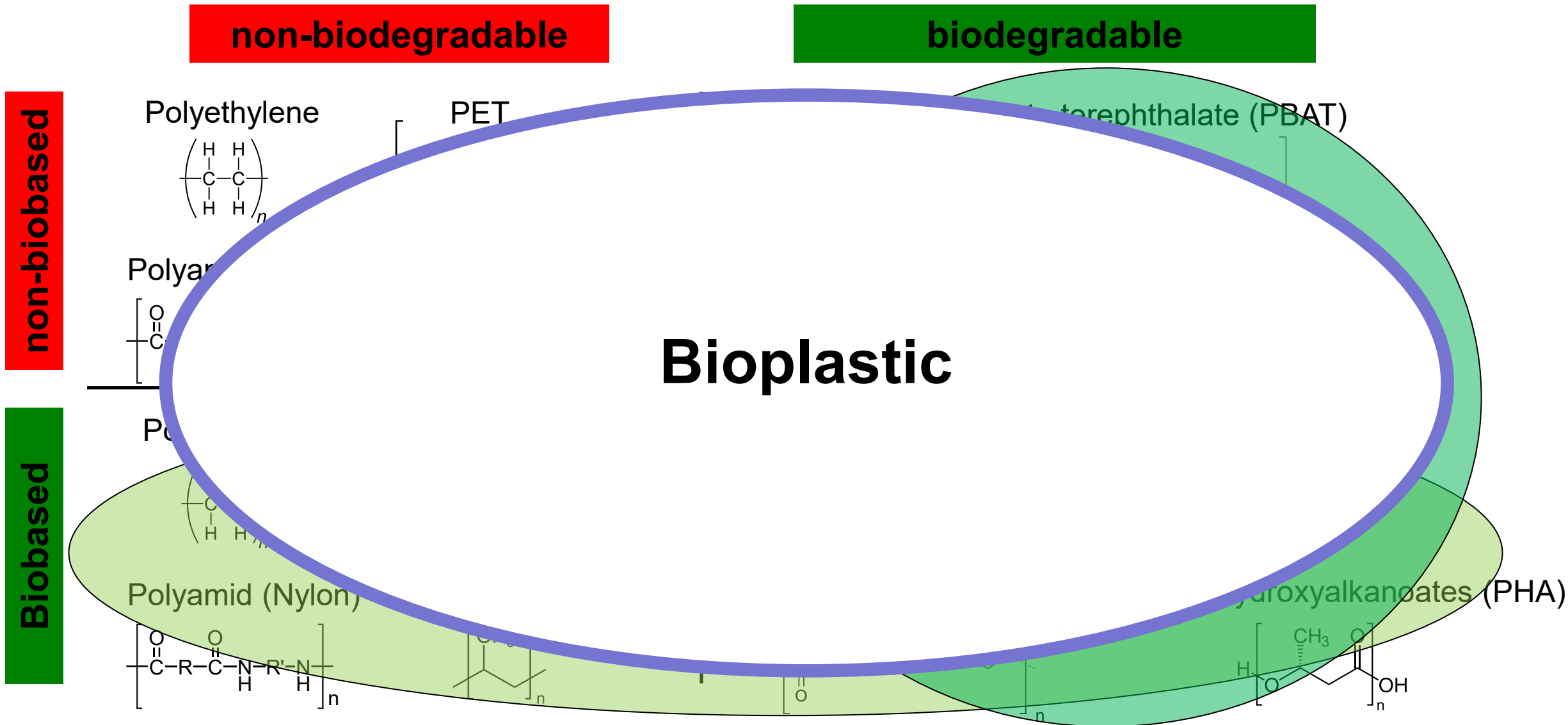
Polybutylene succinate (PBS)



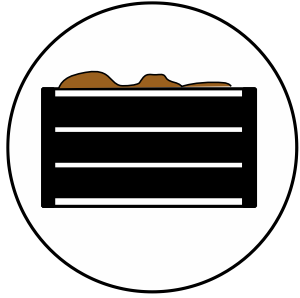
Polyhydroxyalkanoates (PHA)



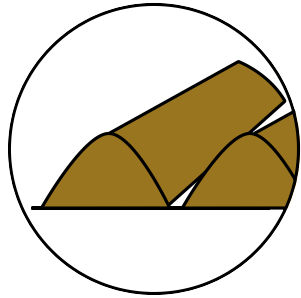
Bioplastic Terminology



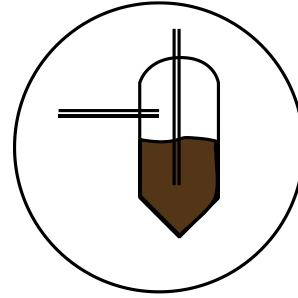
Biodegradation Environment



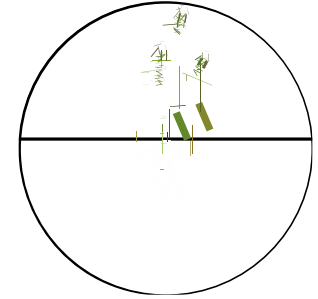
Home compost



Industrial compost

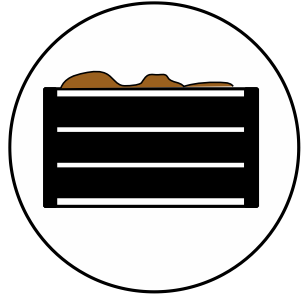


Anaerobic Digester

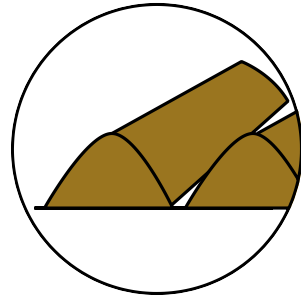


Soil

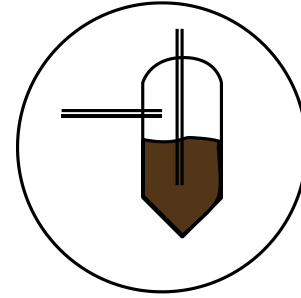
Biodegradation Environment



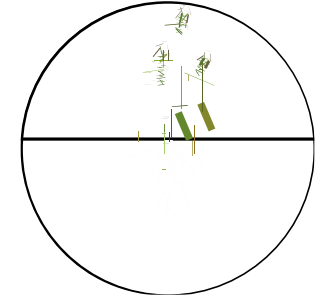
Home compost



Industrial compost

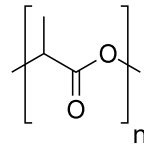


Anaerobic Digester

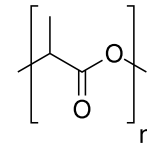


Soil

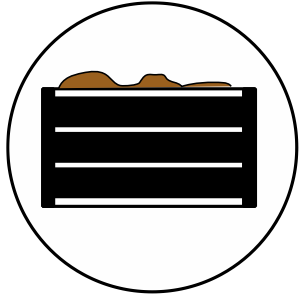
PLA



PLA



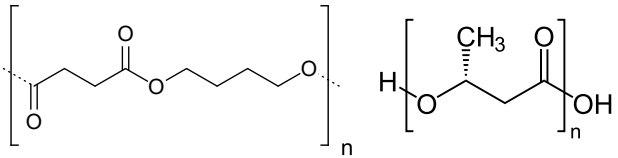
Biodegradation Environment



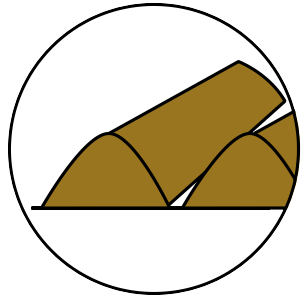
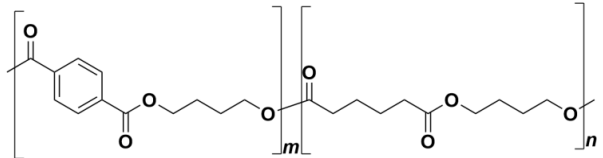
Home compost

PBS

PHA



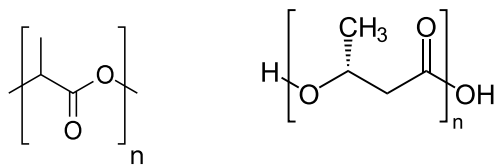
PBAT



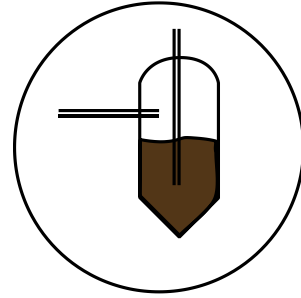
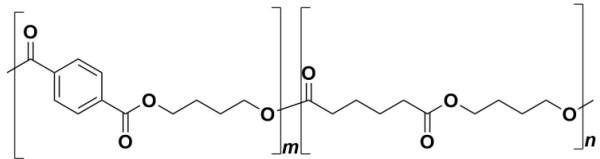
Industrial compost

PLA

PHA

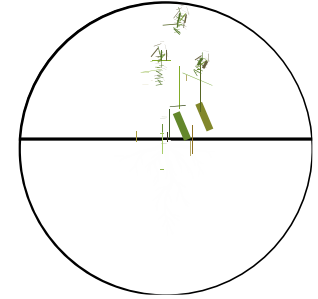
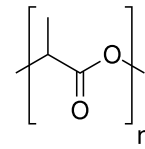


PBAT



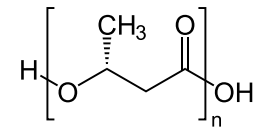
Anaerobic Digester

PLA



Soil

PHA



PBAT

