The glossary of sustainability

Why this manual?

In the world of sustainability materials, there is never enough clarity, the terms overlap, the acronyms do not help us. For its suppliers and for the closest customers, Ecopack has prepared a short manual on the subject, to clarify a subject that is often too often a cause of misunderstanding.

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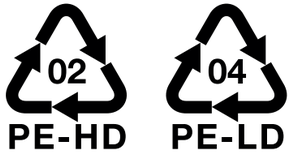
Polypropilene (PP)

It is a type of thermoplastic polymer resin. Hydro repellent. Grease resistant. Lightweight, transparent, flexible. No heat resistant (max 80°C).

Polyethylene (PE)



It is similar to PP. Inner coating for paperboard and paper (i.e. milk carton or food paper for meat); film for food wrapping. It is available as LOW Density (less mechanical strength) and HIGH density polymer.

Polyethylene terephthalate (PET)

Polyester is the most common thermoplastic polymer resin of the polyester family and is used in fibres for clothing, containers for liquids and foods, thermoforming for manufacturing, and in combination with glass fibre for engineering resins. The acronym PET is generally used in relation to packaging. Water and oil-repellant, transparent or coloured, heat resistant (up to 240°C). Recycling: PET is mainly recycled from bottle recycling.

Polystyrene (PS)

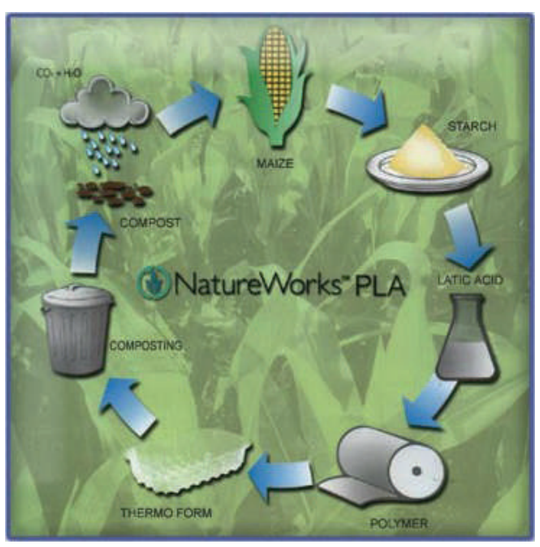
It is an inexpensive resin per unit weight. It is a rather poor barrier to oxygen and water vapour and is not heat resistant. Polystyrene can be naturally transparent but can be coloured with colourants. Uses include protective packaging (such as packing peanuts and CD and DVD cases), containers, lids, bottles, trays, tumblers, disposable cutlery. Polystyrene is regarded as not biodegradable. It could be recycled, but few recycling plants are able to treat it. On the way to be banned from single use.

Polylactic acid (PLA)

It is a thermoplastic aliphatic polyester derived from renewable resources (i.e. Starch). In 2010, PLA had the second highest consumption volume of any bioplastic of the world, although it is still not a commodity polymer.

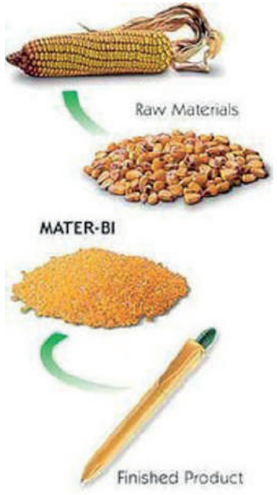
Its widespread application has been hindered by numerous physical and processing shortcomings (i.e. brittle, rigid). Heat-resistant PLA can withstand temperatures of 110 °C.

The basic mechanical properties of PLA are between those of polystyrene and PET. PLA is used as a decomposable packaging material to realize cups and bags and food packaging. It is transparent, water resistant, oil resistant, with some gas barrier. PLA is not yet recyclable.



Mater-Bi

Bioplastic produced and commercialized by Novamont Spa.
It is derived from corn starch through a proprietary industrial process.
It is used for flexible food packaging, cutlery, tableware and bags,
as replacement for PE. High grease and water resistance, can not
withstand temperature (max. 80-90°C).



Fluorocarbon resins (PFAS)

PFAS are a group of chemicals that impart oil and water repellency to various products. They are in the same family of chemicals that were used in Teflon.
PFAS are widely used in the food industry because they create grease-proof and waterproof coatings in food packaging. They are used in various food packaging items, including pizza boxes, fast-food wrappers, microwave popcorn bags, baking papers and pet food bags.

Some of these chemicals (their decomposition by-products) have been linked to cancer and other health risks. Currently, polymer based on C8 chemistry (length of the molecular chain) are banned, while shorter chains can be used because have been estimated to bring limited side-effect.

PFOS, PFOA (C8) → Banned since 2016

Other PFAS (<C8) → Currently used, under testing

Biodegradable, compostable, recyclable

- Both designed to break down into soil over time
- Compostable (best option) takes a shorter amount of time in optimal conditions
- Biodegradable may take decades to break down

- Products can be reprocessed into the same product or a different product
- Plastic is usually recycled into a lower quality product (if at all)

Biodegradability

Biodegradable: products that are biodegradable are capable of being decomposed by bacteria, fungi or algae. Biodegradable items will eventually disappear into the environment and leave no harmful chemicals behind. The amount of time is not really defined.

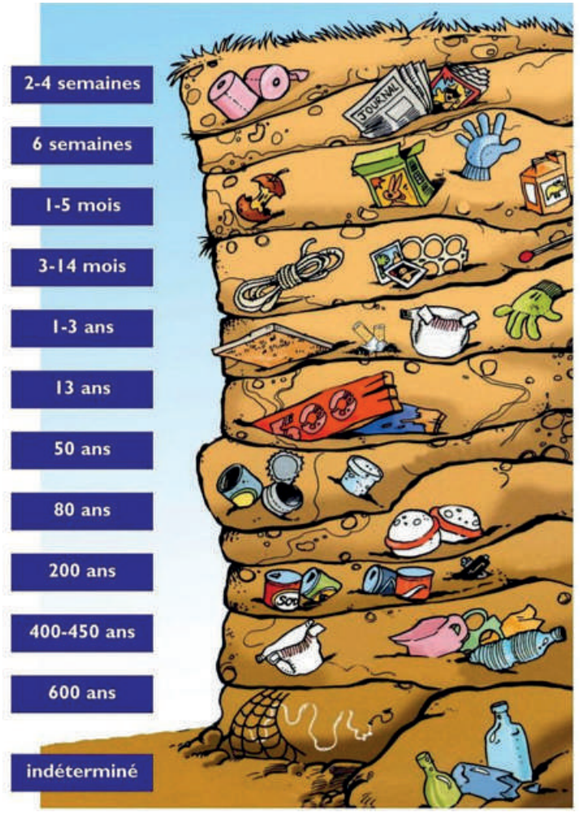
Method: EN ISO 14855:2012, EN 14046:2003
Time of test: 3-6 months
Limit*(specification limits of EN 13432, EN ISO 18606, EN 14995, ISO 17088)>90% (PERCENTAGE BIODEGRADATION)

SOIL
OK bio-degradable
TÜV AUSTRIA
SOIL

WATER
OK bio-degradable
TÜV AUSTRIA
WATER

Biodegradability time

In practice, almost all chemical compounds and materials are subject to biodegradation processes. The significance, however, is in the relative rates of such processes, such as days, weeks, years or centuries.



Biodegradability vs compostability

BIODEGRADABLE

- Natural process
- Converts into CO2, biomass and water vapor
- Unspecified amount of time

COMPOSTABLE

- Controlled process
- Converts into rich soil supplement (humus)
- Typically takes 60-180 days but can take longer

COMPOSTABLE

- Disintegrates into ALL-NATURAL ELEMENTS
- Can be used in your compost bin
- NO MICRO-PLASTICS, no toxicity in the soil
- Breaks down completely, doesn't harm plant growth

BIODEGRADABLE

- Disintegrates into ALL-NATURAL INGREDIENTS, but takes a little longer than compostable
- No harm to its surroundings
- NO MICRO-PLASTICS, no toxicity in the soil

DEGRADABLE

- Commonly confused with biodegradable, all things are actually degradable, it just takes time
- Breaks down through CHEMICAL REACTION
- Could break down into MICRO-PLASTICS, which can end up in the food chain

PLASTIC

- Contaminates the environment with MICRO-PLASTICS
- Cannot dissolve in nature

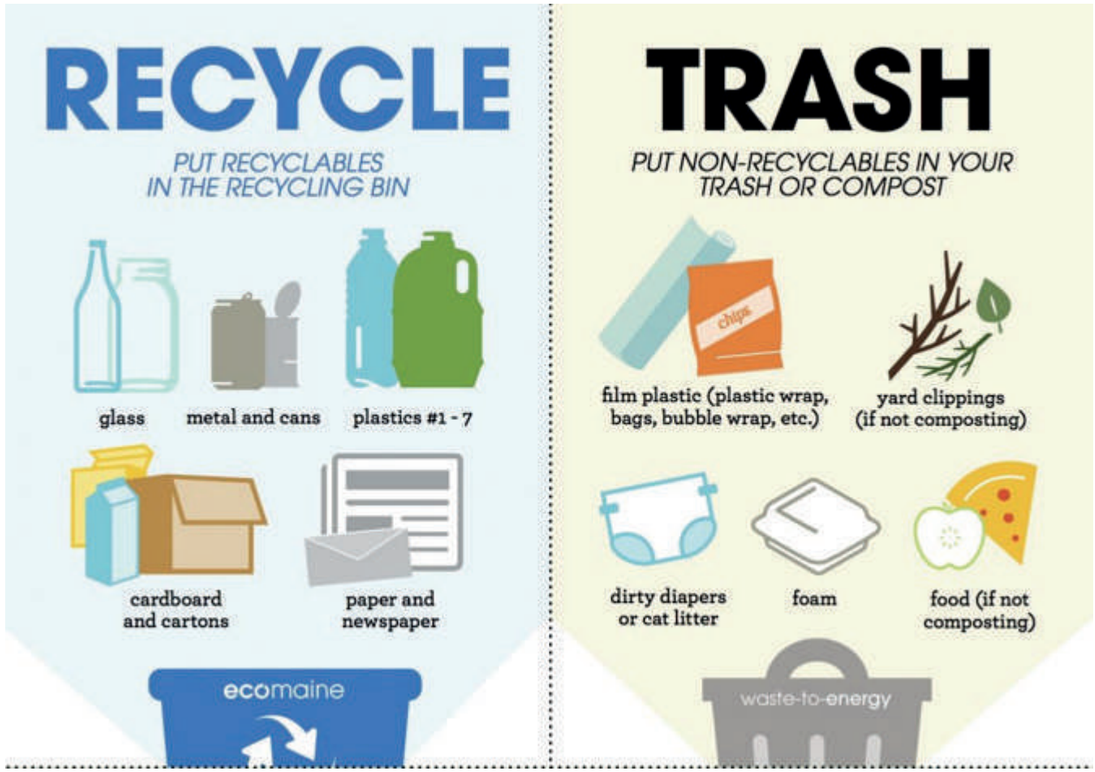
Compostability

Compostable: products that are compostable, are capable of decaying into nutrient-rich, natural material under controlled conditions in a commercial composting facility. This is achieved through controlled exposure to microorganisms, humidity and temperature. Unlike when items are left to biodegrade, when composting items, there is an estimated time frame involved.
Method (European Standard): EN13432

Disintegrability: the physical decomposition of a product into tiny pieces. After 12 weeks at least 90% of the product should be able to pass through 2x2 mm mesh.
Chemical composition: low levels of heavy metals – less than a list of specified values of certain elements.
Quality of the final compost and ecotoxicity: absence of negative effects on the final compost. Other chemical/physical parameters that must not be different from those of the control compost after the degradation.

Recycling

What is recycling? Recycling is the separation of specific materials, usually including plastic, metal, paper, cardboard, and glass, from garbage and diverting it to a facility that will repurpose it for reuse.



Recycling rule

Material is recyclable if it can be collected, sorted, reprocessed, and ultimately reused in manufacturing or making another item. Contamination is the biggest problem facing current recycling practices today. People throw in things they shouldn't, like grease soaked cardboard, plastic bags, or paint cans, and then the entire load needs to be dumped. If it ends up at the recycling center, all pieces in proximity to the contamination can be removed as well, causing slowdowns and strain on the facility.

Guidelines from Comieco

ecopack