

Terminology

- **"Degradable Plastic"** is normally used to describe plastic which will degrade in a shorter timescale than normal plastic.
- **"Biodegradable Plastic" or "Bioplastic"** is plastic which degrades due wholly or partly to the influence of micro-organisms. It may be oil-based plastic or crop-based plastic.
- **"Oxo-degradation"** is defined by CEN (the European Standards Organisation) in TR15351 as "degradation identified as resulting from oxidative cleavage of macromolecules.
- **"Oxo-biodegradation"** is defined in TR 15351 as "degradation identified as resulting from oxidative and cell-mediated phenomena, either simultaneously or successively." Symphony's d2w plastic falls into this category.
- **"Hydro-degradation"** is defined in TR 15351 as "degradation identified as resulting from hydrolytic cleavage of macromolecules.
- **"Hydro-biodegradation"** is "degradation identified as resulting from hydrolytic cleavage of macromolecules and cell-mediated phenomena, either simultaneously or successively." The "compostable" plastics normally fall within this category.
- **"Compostable plastic"** is normally used to describe hydro-biodegradable plastic which can comply with the composting Standards (EN13432, ASTM D6400, D6868, ISO 17088 and Australian Standard 4736-06. However, trials are ongoing which show that oxo-biodegradable plastic can be composted satisfactorily in industrial composting facilities. Composting is a man-made process which works to a short timescale, and is not the same as biodegradation in the environment.
- **"Bio-based plastic"** is normally used to describe plastic which is derived from vegetable matter such as corn-starch.
- **Oxo-biodegradable plastics** will biodegrade in the presence of oxygen in a timescale which can be approximately determined by the chemical formulation which is added to normal plastic at the extrusion stage. They are therefore "Controlled-life" Plastics.
- **Hydro-biodegradable plastics** are intended for composting, and will biodegrade only if they are in a highly-microbial environment such as a composting plant. The rate of biodegradation cannot be determined at manufacture. Although hydro-biodegradable plastics are designed for composting, 90% of the plastic must (as indicated above) be converted to CO₂ gas within 180 days. They therefore contribute to climate change but not to the improvement of the soil. They are also much more expensive and many of them are not strong enough unless mixed with oil-based plastic.

Recently, interest has been renewed in manufacturing sugar-derived polyethylenes. These, like fossil-derived PE, are not biodegradable, but they can be made oxo-biodegradable in the same way, by the addition of a pro-degradant formulation.

It is essential to distinguish between the different types of biodegradable plastic, as their costs and uses are very different. For more information about oxo-biodegradable plastic and a detailed comparison with hydro-biodegradable plastic see the [**Oxo-biodegradable Plastics Association**](#) website.