

Composting

Compostability of plastics is really an irrelevance because compostable plastics are far too expensive for everyday use, and there are very few industrial composting facilities available. Moreover, as it is difficult and expensive to separate compostable plastics from other plastics, many industrial composters do not want plastic of any kind in their feedstock. Home composting of plastic packaging is dangerous and should not be encouraged, as it is often contaminated with meat, fish, or poultry residues, and temperatures do not rise high enough to kill the pathogens.

European standard EN 13432 applies to composting of plastic packaging, but it is not appropriate for testing oxo-biodegradable plastics. This is because it is based on measuring the emission of carbon dioxide during degradation. Hydro-biodegradable plastic is compliant with EN 13432, precisely because it emits CO₂ (a greenhouse gas) at a high rate.

If a leaf were subjected to the CO₂ emission tests included in EN13432 it would not be considered biodegradable or compostable!

Another problem with EN 13432 is that it requires almost complete conversion of the carbon in the plastic to CO₂, thus depriving the resulting compost of carbon, which is needed for plant growth, and wasting it by emission to atmosphere

Conversion of organic materials to CO₂ at a rapid rate during the composting process is not "recovery" as required by the European Directive on Packaging and Packaging Waste (94/62/EC as amended), and should not really be part of a standard for composting. Nature's lignocellulosic wastes do not behave in this way, and if they did the products would have little value as soil improvers and fertilisers, having lost most of their carbon.

EN 13432, does not however require that plastics biodegrade during and after composting within any particular time-scale. Paragraph 5 of EN 13432 says: "It is important to recognise that it is not necessary that biodegradation of packaging material or packaging be fully completed by the end of biological treatment in technical plants but that it can subsequently be completed during the use of the compost produced"

This is what oxo-biodegradable plastic does, and it is consistent with the behaviour of nature's waste products such as twigs, leaves and straw, which take years to biodegrade fully. Oxo-biodegradable plastics will biodegrade much more quickly

The EU Directive does NOT require that when a packaging product is marketed as "degradable" or "compostable" conformity with the Directive must be assessed by reference to EN13432. In the first place although the Directive provides that conformity with its essential requirements may be presumed if EN 13432 is complied with, it does not exclude proof of conformity by other evidence, such as a report from a reputable testing institution. Indeed Annex Z of EN13432 itself says that it provides only one means of conforming with the essential requirements.

Secondly, EN 13432 does not apply at all to applications other than composting of packaging. Para. 1 of EN13432 itself makes it clear that it does not apply to packaging waste which may end up in the environment through uncontrolled means, ie as litter.

On 11th September 2003 a Report to the Australian Government by the Nolan-ITU Consultancy concluded that:

"oxo-biodegradable plastics based on polyolefins contribute to the amount and nutritive value of the compost because much of the carbon from the plastic is in the form of intermediate oxidation products, humic material and cell biomass. This is in contrast to plastics such as hydro-biodegradable polyesters (eg starch-based) that biodegrade at rates comparable to purified cellulose. At the end of the commercial composting process, all of the carbon from the latter has been converted to CO₂ so there is a contribution to greenhouse gas levels but not to the value of the compost."

The same Report concluded that "degradable polymers manufactured from renewable resources (e.g., crops) have greater impacts upon eutrophication due to the application of fertilizers to land."

Oxo-biodegradable plastic does not degrade quickly in low temperature "windrow" composting, but development is ongoing for "in-vessel" composting of oxo-biodegradable plastic at the higher temperatures required by the EU animal by-products regulations. Indeed it is likely that windrow composting will soon have to be phased out except for grass, leaves, and other garden waste.

¹. and its US equivalent ASTM 6400. There are also other national equivalents eg in Australia.

². Annex II para. 3

³. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1994L0062:20050405:EN:PDF>

⁴. Article 9(2)

⁵. Para. 7.3