

Position on

"Degradable" PE Shopping Bags



International Biodegradable Polymers
Association & Working Groups

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Background

Plastic bags and other products, e.g. agricultural mulching foils, made with polyethylene (PE) are appearing on the market with the claim of being "*degradable*", or "*bio-, UV- or oxo-degradable*", and sometimes even "*compostable*". The underlying technology is based on special additives (master batch) which, if incorporated into standard PE resins, are purported to accelerate the degradation of the film products (mainly shopping bags). However this technology and the products are not new, and since their first appearance on the market in the 80s many doubts have been expressed as to whether these products provide what they promise. Such doubts are still valid in the current context.

IBAW, the international industry organisation for bioplastics and biodegradable polymers, is publishing this position, which outlines the questions raised by "degradable" PE products.

IBAW Position

▪ **Compliance with EN 13432 - The underlying test scheme for evaluation**

The EU Directive on Packaging and Packaging Waste (94/62/EC) defines requirements for packaging to be considered recoverable. The harmonised standard EN 13432 amplifies these requirements with respect to organic recovery and biodegradable packaging. The EN 13432 lays down laboratory test procedures for biodegradability and compostability and for the determination of potential harmful material constituents in packaging and packaging materials. Whenever a packaging product is placed on the market as "degradable", conformance with the requirements of 94/62/EC is to be assessed through the use of EN 13432.

No PE additive product has yet been shown to comply with EN 13432.

- **Certification and Labelling Required**

Product certification based on EN 13432 and labelling through an accredited conformity assessment body are to be applied to all plastic products that are claimed to be "degradable", "biodegradable" or "compostable". A responsible industry has developed an environmental self-commitment on product certification to achieve the highest possible product safety and lowest possible environmental impact. The commitment was officially acknowledged by the EU Commission in February 2005.

- **Product Safety and Ecotoxicity**

The so called "oxo-biodegradable" additives pose several concerns regarding safety and ecotoxicity. These additives are based on ionic metals that trigger PE fragmentation. Some metal compounds used in these products are classified and labelled under the EU Directive 67/548/EEC on Dangerous Substances as causing adverse effects on humans and the environment. For instance, cobalt Co(II), has been found in concentrations higher than 4,000 mg/kg in "oxo-biodegradable" additives. At such high concentrations these materials are considered harmful if released into the environment, and are regulated at the workplace of plastic manufacturers and converters, since metal fumes might be released through dust or under heating. During the fragmentation process however, regulated metals may be liberated into the environment with the consequence of adding (eco)toxic persistent and bio accumulative CMR substances (Carcinogenic, Mutagenic, toxic to Reproduction).

- **The Risk of Persistency and Bio-Accumulation**

It is well established that standard PE is not biodegradable. It has been demonstrated in case studies that the so-called "oxo-biodegradable" PE products may fragment into very small particles after exposure to UV light or dry heat. However after fragmentation, PE is still to a large extent resistant to biodegradation and, therefore, due to the slow process, the potential of persistency in the environment and bioaccumulation of liberated regulated metals and PE fragments in organisms is high.

- **Littering**

"Oxo-biodegradable" PE products have been described as a solution to littering problems, as after trashing they supposedly decompose in the natural environment. De facto such a concept promotes littering and endangers organic recovery schemes which are built up to promote sustainability.

- **Plastic Recycling Schemes**

"Oxo-biodegradable" products endanger not only organic recovery but also recycling processes of plastics. The additives destabilise plastic recyclates of mixed origin, which may lead to a reduced value of recycled plastics. Plastic recovery and recycling schemes may not be prepared to accept products that contain additives that promote degradation.

IBAW represents industry that is pursuing the development of a new material class. These plastic-like materials are polymers that are proven to be biodegradable / compostable according to EN 13432. No additives are needed to achieve these properties as the polymer itself already displays these specific characteristics. Furthermore, renewable resources like starch, sugar, cellulose or vegetable oil are often and increasingly used for the manufacture of this new material class.

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