PlasticsEurope
Association of Plastics Manufacturers

PLASTICSEUROPE´S VIEW ON "BIOPLASTICS"

Recently, environmental and climate protection issues have gained in importance for both decision makers and the general public. This has led to increased interest in "bioplastics".

In the present paper, PlasticsEurope provides key information to give an insight into "bioplastics". This document shall serve as:

- **The basis for a response to political and public concerns in order to eliminate confusion in the marketplace and to avoid misinterpretation.**

- **A reference document for discussion within the industry, urging appropriate evaluation of the risks and business opportunities in this relatively new market segment.**

Definitions

Many stakeholders use the general term "bioplastics" to describe two different concepts, often leading to confusion. We distinguish between:

- *Biodegradable plastics* – referring to their specificity at their end-of-life and
- *renewable resource-based, or biomass-based plastics* - meaning plastics made from an alternative raw material source.

It is important to understand that bio-based plastics are not always biodegradable and that biodegradable plastics are not always bio-based. It is possible to make biodegradable polymers from fossil raw materials. It is essential to make this distinction in order to avoid confusion when addressing different societal and environmental concerns of bioplastics.

Position

- PlasticsEurope welcomes and supports all innovations which enable plastics products to meet the required high quality performance.

- PlasticsEurope recommends that the environmental claims such as biodegradability, compostability or the bio-based content are in compliance with appropriate standards such as ISO 14021[1].

- PlasticsEurope supports the application of the recognised compostability standards (EN 13432[2], EN 14995[3]) dealing with the biodegradability of compostable plastics in specific and well defined industrial composting environments. Only products that meet the above-mentioned standards should be labelled compostable, or biodegradable in the specific

[1] ISO 14021: Standard "Environmental labels and declarations - Self-declared environmental claims" (Type II environmental labelling)
[2] EN 13432: Standard "Packaging - Requirements for packaging recoverable through composting and biodegradation - Test scheme and evaluation criteria for the final acceptance of packaging" is an European-accepted testing scheme which defines the compostability of packaging and describes test methods to determine the biodegradation of polymers in the timeframe of industrial composting systems
[3] EN 14995: Plastics - Evaluation of compostability - Test scheme and specifications

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environmental conditions defined by the EU standards (i.e. “biodegradable in industrial composting”, “biodegradable in soil” etc.).

- PlasticsEurope recommends that any product environmental impact should be measured against comprehensive Life Cycle Assessments together with costs evaluations. As such, it is not correct to assume that biodegradable or bio-based plastics have by definition a lower environmental impact.

- It must be underlined that market requirements will remain a determining factor in choosing the plastic grade with the desired property profile. The choice is therefore directly related to the functionality and not to the raw material base of the plastic which can be either fossil or bio-based.

- PlasticsEurope seeks a level playing field allowing bio-based and biodegradable plastics to grow their market share. It is also crucial that any environmental claims are backed by sound science and EU standards.

- Biodegradable plastics are not a solution for littering. In order to benefit from the advantages of biodegradability, these plastics should be properly disposed of in the appropriate composting facilities.

Biodegradable Plastics

Biodegradability and compostability as material properties are regulated by international standards.

Biodegradable plastics are degradable due to the action of micro-organisms and enzymes. The aerobic or anaerobic decay of biodegradable plastics by micro-organisms is the conversion of the organic matter into carbon dioxide (or methane), mineral salts and water under specific environmental conditions, either through processes in nature or man-made (degradation in industrial composting plants, anaerobic digestion plants, etc.).

Compostable plastics are degradable due to a biological process occurring during composting and are converted into carbon dioxide, water, mineral salts and biomass. There are no toxic side effects like toxic residue for water, soil, plants or living organisms. Claims of biodegradability of packaging and plastics waste in composting applications are currently specified by EN 13432 and EN 14995, respectively. Products fully complying with the requirements of these standards are capable of undergoing a complete biological decomposition solely due to the action of naturally occurring micro-organisms under industrial composting conditions.
It should be noted that not all biodegradable materials meet composting criteria. Materials which do not fulfil these criteria may still be biodegradable under specific environmental conditions.

To make sure the waste treatment facilities are working properly, it is important that only plastic waste which is compliant with the official compostability standards and the requirements of the respective facility enters composting or digestion streams.

Compostability brings added-value to specific products in terms of their end-of-life management. Examples involve composting of both food and its packaging, compostable waste bags for the separate collection of organic wastes, compostable catering products (cutlery cups and plates)

where the used products can be disposed of with the food rests or agricultural plough in applications such as biodegradable mulch and seed films.

PlasticsEurope supports the development and application of EU standards for biodegradability of plastics under specific conditions, i.e. soil, to create fair conditions of competition for the development of these materials.

There are also other degradation mechanisms such as oxo-degradation or UV-degradation induced by specific modification of the plastics materials. Plastics packaging with such degradation mechanisms cannot be classified as biodegradable plastics, as they do not meet the existing EU standards. At present there are no standards or certifications for oxo- or UV-degradable plastics or plastic products in Europe.

Bio-based plastics

Bio-based plastics are plastics derived entirely or partially from renewable resources (biomass). Biomass is defined as a material of biological origin excluding material embedded in geological formation or transformed into fossil fuels, such as peat, oil, lignite, natural gas and coal. The use of renewable resources as feedstock in the production of bio-based materials is seen as a way of reducing the dependency on oil.

Bio-based plastics made from renewable resources can be used in a variety of applications and complement currently used fossil based products. Bio-based plastics can offer similar, additional or even better functionality depending on its composition.

Two main arguments are commonly associated with the use of renewable raw materials to manufacture plastics products:

1. **Environmental aspects:**

Use of renewable raw materials for the production of industrial products such as bio-based plastics is a contribution to climate protection if greenhouse gas emissions, particularly CO_2, are reduced. Such environmental benefits need to be proven by a life cycle management approach as for any other material or product.

The exploitation of biomass waste derived from agricultural productions and forestry, for the production of bio-based plastics could represent a significant contribution to resource efficiency and climate protection. It therefore merits further research efforts and technical development.

2. **Structural and political aspects:**

There are numerous EU-Initiatives supporting the development of bio-based materials.

The EU 2020 Strategy and its flagship initiative on “A Resource Efficient Europe” (COM (2011) 21)[4] underlines the importance of renewable resources in our future economy.

[4] http://ec.europa.eu/europe2020/index_en.htm

The European Commission's "A Lead Market Initiative for Europe" (LMI)[5] has been presented as an innovative platform for further research and development around a bio-based economy in Europe. The LMI will provide a market outlet for industrial and consumer products based on renewable, biological raw materials such as plants and trees. In March 2011 the European Commission mandated the European Committee for Standardization (CEN) to develop horizontal European standards for bio-based products, succeeding the CEN-Report of the working group CEN/BT/WG 209 "Bio-based products" on the earlier programming mandate M/429 on Bio-based Products[6].

The EU's Green Public Procurement Guidelines now also include criteria that allow bio-based products to be given preference in tender specifications. The EU's Competitiveness and Innovation Framework Programme (CIP)[7] supports projects connected with eco-innovative products, techniques, services or processes which aim at preventing or reducing environmental impacts or contributing to the optimal use of resources. It promotes the substitution of conventional materials by materials with reduced environmental impacts and higher resource efficiency (e.g. bio-based products).

PlasticsEurope *represents the plastics manufacturers in Europe. The association has more than 100 member companies, producing over 90% of polymers across the EU's 27 member states plus Croatia, Norway, Switzerland and Turkey. The plastics chain in Europe - including converters and machinery manufacturers -employs 1.6 million people. The combined turnover of our industry is approximately 300 billion € per annum.*

PlasticsEurope *operates from six decentralised offices: one in Brussels and five regional centres located in France, Germany, Italy, Spain and the UK.*

16 May 2012

[5] http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/
[6] ftp://ftp.cen.eu/CEN/Sectors/List/bio_basedproducts/BTWG209finalreport.pdf
[7] http://ec.europa.eu/cip/