Masterbatch Verband
im Verband der Mineralfarbenindustrie e. V.
www.masterbatchverband.de

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Questions & Answers on Masterbatches in Bioplastics

What are Bioplastics?

Bioplastics are thermally processable polymers. They mostly consist of bio-based raw materials and/or they are bio-degradable.

What is the difference between bio-degradable, bio-based and compostable? How is the term "bio-based plastics" to be understood?

Bio-based plastics are manufactured by using renewable raw materials; bio-based plastics are not necessarily bio-degradable.

What are bio-degradable plastic products ?

A plastic product is deemed bio-degradable if all organic components are generally - without any time factor – subject to primary and final decomposition, which is attributable to biological activity and results in water, carbon dioxide, energy and possibly biomass.
Next, the prerequisite conditions for decomposition and periods of time lead to a differentiation between industrial and domestic compostability.

How can the certificate as a bio-degradable / compostable material be obtained?

Recognition as a bio-degradable / compostable material is granted only if at least 90% of the material is decomposed within 12 weeks' time in industrial composting, according to the European standard EN 13432. Testing of the end product needs be performed by a DIN CERTCO recognized test institute
(see http://www.dincertco.de/de/pruefpartner.html)

What are currently the most important bioplastics?

Suitable for use in the manufacture of (technical) bioplastics or bio-materials are, inter alia, technically available bio-polymers based on starch, cellulose, lignin (wood constituent), polylactic acid (PLA) and polyhydroxybutyrate (PHB).

Do wood-plastic-composites (WPC) fall under bio-polymers?

Yes, if the carrier is a bioplastic.

Can I place a finished product from bioplastics in domestic compost?

Under existing law in Germany, bioplastics need to be disposed in domestic waste. The introduction of a specific recycling code will be discussed from 2012, because standard EN 13432 was designed for industrial composting plants.

Can bioplastics be coloured with masterbatches and/or can masterbatches be used as additives to bioplastics?

Clearly, yes.
The requirements of standard EN 13432 need to be complied with for compostable plastics.

What market importance will bioplastics have in the future?

At present, the share of bioplastics in the overall demand for plastics is still less than 1%. From the aspect of sustainability and in view of the finiteness of fossil raw materials, the market importance of bioplastics is very likely to grow. CO_2, which is released in the decomposition and incineration of bioplastics, comes from a renewable resource. Consequently, it is not included – as a climate-relevant greenhouse gas – in the climate balance (it is climate-neutral). Forecasts state that the share of bioplastics in the overall demand for plastics will rise to ca. 5% by 2030.

Where are bioplastics used already now?

PLA is used, for example, for beverage bottles, mobile phone casings, keyboards, automotive components and food packaging (event catering).

Starch-based compounds are frequently used for bags or food packaging (films).

Polyhydroxyalkanoates (PHA) are used for films, fibres, thermoplastic materials, dispersions for adhesive raw materials or coatings.

A growing use of bioplastics can be expected in the manufacture of non-durable products.

Given their property profile, bio-based plastics can – as a matter of principle – substitute polymers of fossil origin, also in durable products and in complex fields of application (e.g. cosmetic packaging, machine casings).

In what way do member companies of Masterbatch Verband support the use of bioplastics?

Masterbatch manufacturers see themselves as a responsible part of the value chain in the plastics industry. They support the use of bioplastics by developing system solutions while observing product-specific frame conditions.

What about the future developments for bioplastics?

With growing capacities of bioplastics, it can be assumed that further fields of application will become possible or be opened up under economic aspects.
Legislations for CO_2 reduction might lead to a stronger demand for bioplastics.
It is worth noting that bioplastics and their uses are partial aspects of the plastics world. They are complementary to conventional plastics and their applications.