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Questions and answers on masterbatches in bioplastics

What are bioplastics?

Bioplastics are thermoplastic-processable plastics that consist mainly of bio-based raw materials and/or are biodegradable.

What is the difference between biodegradable, biobased and compostable?

Biobased plastics:

Biobased plastics are produced using renewable raw materials, e.g. starch, sugar cane. Biobased plastics are not necessarily biodegradable.

Biodegradable and compostable plastics:

Plastics are described as biodegradable if all organic components are subject to primary and final degradation in water, carbon dioxide, energy and, if necessary, biomass, caused by biological activity without any time factor.
Plastics are compostable if they can be degraded in a composting system.
The required degradation conditions and periods then lead to a distinction between industrial and domestic composability.

What certificates are available for biodegradable and biobased materials and how can they be obtained?

Certificates for biodegradable and compostable materials:

For a material to be recognised as biodegradable and compostable, at least 90 % of it must decompose within 12 weeks in an industrial composting facility in accordance with the European standard EN 13432. Information on testing the end product can be found at

- DIN CERTCO, a partner for all aspects of conformity assessment, see DIN CERTCO | TÜV Rheinland
- TÜV AUSTRIA (formerly Vinçotte), a certification body approved by the European Bioplastics Association Home - TÜV AUSTRIA Belgium

Certificates for biobased materials:

For example, a material can obtain the *OK biobased* certificate (TÜV AUSTRIA), by having its biobased carbon content measured or calculated using the C14 method. Based on the percentage of renewable raw materials determined, the product is then awarded 1 – 4 stars.

Source: TÜV AUSTRIA https://www.tuv-at.be/de/okcert/zertifizierungen/ok-biobased/

Comparable certificates are also issued by DIN CERTCO:
https://www.dincertco.de/din-certco/de/main-navigation/products-and-services/certification-of-products/environmental-field/biobased-products/

What is ISCC + certification?

ISCC is a sustainable certification system for agricultural and forestry raw materials and their markets. It complies with the European Commission's Renewable Energy Directive (RED) and Fuel Quality Directive (FQD).

ISCC PLUS covers all types of agricultural and forestry raw materials, agricultural waste and processing residues.

ISCC certification is required by all parties within the supply chain. The number of certified companies is constantly growing. An up-to-date list can be found at the following link:
All Certificates › ISCC-System (iscc-system.org)

Can I put finished products made from bioplastics in my household compost bin?

In general, biodegradable plastics must not be disposed of in organic waste, they must be disposed of in the yellow bin *(yellow bin in German waste disposal system: any waste made of plastic, metal or composite materials).* Only collection bags that are biodegradable in accordance with EN standards 14995 or 13432 and that are predominantly biobased, may be disposed of there – unless the local waste disposal company prohibits it. However, in many cases waste disposal companies prohibit this because composting takes too long.

Source Wikipedia: https://en.wikipedia.org/wiki/Biodegradable_plastic

Which bioplastics are currently the most important?

Technically available biopolymers based on starch, cellulose, lignin (wood component), polylactic acid (PLA) and polyhydroxybutyrate (PHB) can be used to manufacture (technical) bioplastics or biomaterials. Polyhydroxyalkanoate (PHA), polybutylene adipate terephthalate (PBAT) and polybutylene succinate (PBS) are also relevant.

Furthermore, there are now many alternatives to conventional plastics such as PE and PA that, although not biodegradable, are nevertheless biobased.

Are WPCs (wood plastic composites) also considered bioplastics?

Yes, provided the plastic carrier is a bioplastic.

Can bioplastics be coloured using masterbatches and/or additives be added?

Yes, definitely. Compostable plastics must comply with the requirements of EN 13432 standard.

From a technical point of view, masterbatches based on fossil raw materials can also be used without any problems in plastics made from renewable raw materials.

How do the Masterbatch Verband member companies support the use of bioplastics?

Masterbatch manufacturers see themselves as a responsible part of the value chain in the plastics industry and support the use of bioplastics by developing system solutions that take product specific conditions into account.

What does the future hold for bioplastics?

Given the increasing capacities for bioplastics, it can be assumed from an economic perspective that new applications will be made possible or developed.
Legislation on CO_2 reduction may lead to an increased demand for bioplastics.

It should be emphasised that bioplastics and their applications are just one part of the plastics industry, complementing conventional plastics and their applications.

Contact:

Masterbatch Verband
im Verband der Mineralfarbenindustrie e. V.
Mainzer Landstr. 55
60329 Frankfurt
www.masterbatchverband.de
www.vdmi.de

Dr. Heike Liewald / Martin Brendel
liewald@vdmi.vci.de / brendel@vdmi.vci.de

Masterbatch Verband – German Masterbatch Association
The association represents the interests of German manufacturers of colour and additive masterbatches. It is a sector group of Verband der Mineralfarbenindustrie e. V. (VdMi).

The VdMi is listed in the Lobbying Register for the Representation of Special Interests vis-à vis the German Bundestag and the Federal Government (Lobbyregister des Deutschen Bundestags, number R000760) as well as in the Transparency Register of the EU Commission (number 388728111714-79).