Intelligent plastics, naturally
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Our mission is to produce bioplastics that can challenge the dominance of oil-based polymers, and ultimately replace them completely.
What is a bioplastic?

A bioplastic is a plastic that is made partly or wholly from materials derived from biological sources, such as sugarcane, potato starch or the cellulose from trees and straw.

Bioplastics are often designed so that they biodegrade or compost at the end of their useful life, aided by fungi, bacteria and enzymes.

Bioplastics can generally be directly substituted for their oil-based equivalents. They can also be made to be chemically identical to standard industrial plastics.

Why bioplastics?

A more sustainable product
Bioplastics reduce the use of non-renewable, oil-based resources, which are increasingly scarce and unstable in price.

Managed end-of-life
Bioplastics can biodegrade or compost at the end of their useful life. Durable plant-based bioplastics can also be recycled as well as their conventional equivalents.

Consumer engagement
Consumers are increasingly seeking more environmentally friendly products, and looking to brands to demonstrate their sustainability credentials. Products and packaging made from bioplastics send a direct message to consumers.

Intelligent benefits
Bioplastics can be engineered to have novel technical characteristics such as vapour control and tactile properties. Tailored to biodegrade after a determined period of time, they can also enrich the soil on decomposition.

Improving carbon footprints
Biomass feedstock absorbs carbon dioxide as it grows. In addition, bioplastic manufacture can use less energy in production, reducing manufacturing costs and lowering the carbon footprint of the final product.

From their inception over 100 years ago, plastics have become indispensable to our daily lives.

In 1907 Leo Baekeland added phenol to formaldehyde to form Bakelite. Leo became a very wealthy man and the world became a very different place. Today, plastics are indispensable at every stage of the supply chain, for every industry, product or service.

However, whilst plastics are prized for their durability, light weight and long life, it is these very factors that make them one of the larger environmental threats of the modern world. Apart from the small amount that’s incinerated, every bit of plastic made over the last century is still present somewhere on our planet. The price of this ‘miracle material’ is being paid by the natural world: from the sea life that consumes it, to hormonal disruption in animals, to the area of ocean dominated by the Great Pacific Garbage Patch.

Around 4% of the oil that the world uses every year goes into producing plastics. Global resources have long been unable to sustain escalating consumption. As the cost of oil rises and the effects of global warming intensify, governments and industries the world over are forced to take action. As giving up plastics would mean giving up modern life as we know it, attention is turning to a viable, natural alternative.

Bioplastics are that alternative; they are made partly or wholly from sustainable plant sources, and are often biodegradable, composting at the end of their useful life. Challenging the dominance of oil-based products, modern bioplastics are now suitable for an impressive range of applications without the need for new equipment or infrastructure.
Food service
Problem: UK pubs, restaurants, takeaway outlets and hotels produce over three million tonnes of waste every year. The challenge is to create sustainable packaging without impacting on food quality or safety, or inconveniencing the customer. The desire for resources that are GM-free and non-food-derived is particularly important to this sector.
Solution: Our biopolymers are suitable for a wide range of catering and food-to-go products, from thermoformed coffee cup lids to injection-moulded cutlery and coatings for paper and board. Our plant-based products perform as well as oil-derived equivalents, and are 100% biodegradable and ready to compost along with food waste.

Packaging
Problem: The development of sophisticated packaging has vastly improved the shelf life of products whilst helping to define brands’ relationships with their customers. However, with vast amounts of packaging ending up in landfill, unsustainable packaging is a highly visible environmental issue.
Solution: Bioplastics provide an ideal solution, removing the environmental impact without removing the packaging. Our plant-based polymers compost at the end of their useful life. Our products can be used for a wide range of packaging items, from primary and secondary packaging films, laminates and rigid sheets for thermoforming and vacuum forming, to point-of-sale displays, trays and merchandisers.

Cosmetics
Problem: The cosmetics industry creates over 120 billion units of packaging a year. Much of this is short lived and often ends up in landfill. Even the most basic daily personal care products, such as toothbrushes and razors, pose a major environmental challenge. However, consumers have come to expect high standards and don’t want to compromise on quality in the drive for a more sustainable solution.
Solution: Our plant-based bioplastics ensure that brands in the cosmetics and personal care sector are caring for both people and the environment. Our materials can be extrusion blow moulded to form opaque, soft-feel bottles whilst accompanying bioplastic caps can be injection moulded.

Automotive
Problem: With transport representing one of the highest contributors to global carbon emissions, automotive manufacturers are addressing materials as part of the drive to design more sustainable vehicles. In this industry, safety and performance are paramount and cannot be compromised.
Solution: Bioplastics can be used in place of oil-derived equivalents for the automotive industry. They can be injection moulded with characteristics similar to ABS, without any modifications required to existing machinery.

Industrial
Problem: As a highly carbon intensive sector, industry is increasingly focused on how best to process limited natural resources into products with minimal environmental impact and reduced greenhouse gas emissions.
Solution: Bioplastics meet the demand for both long-life and cost-effective materials that underpin the sustainability of operations. Our product ranges are optimised for films, fibres, casting, moulded and rotomoulded items.
Building on over 20 years of development activity, we produce an impressive range of high-performance bioplastics that meet our customers’ demands for both environmental and end-of-life performance.

**High temperature**
Our BiomeHT range for moulding and thermoforming shows unrivalled heat resistance whilst being from a GM-free, non-food, sustainable source.

**Coating**
BiomeEasyFlow is perfect for extrusion coating to paper, board and film, providing a GM-free, biodegradable and compostable alternative to oil-based LDPE.

**Lamination**
BiomeBioLam is designed for lamination within complex multilayered film structures with excellent barrier performance and interlayer adhesion.

**Cords**
BiomeCord for spun fibre and monofilaments provides a sustainably sourced and biodegradable alternative to polyamide resins.

**Flexible films**
BiomeEP for blown films offers enhanced print and adhesion characteristics, enabling excellent print quality at high production speeds.

**Formed products**
Our BiomeRG range for moulded, vacuum formed and thermoformed products provides a bioplastic solution with proven performance.

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**Key properties**

- **High renewable content**
  We aim for the highest possible bio-based content in all of our products, reducing the use of non-renewable, oil-based resources.

- **Enhanced performance**
  We focus on the production of high performance biopolymers that offer a competitive alternative to conventional oil-based plastics.

- **Range of feedstocks**
  Our products use a range of natural feedstocks including potato starch, corn starch and cellulose. We look to use GM-free materials wherever possible.

- **Biodegradable**
  All of our products are 100% biodegradable and compostable according to EN 13432, ASTM D6400 and Vinçotte OK compost standards.

- **Food safe**
  Our product range is both EU and FDA food contact approved.

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**Processing**

- **Existing machinery**
  Our product ranges are developed to process on conventional machinery with no modifications required to existing equipment.

- **Lower temperature**
  Bioplastics typically require lower production temperatures, providing energy savings for the converter.

- **Recyclability**
  Production waste can be re-granulated and used with virgin material.

- **Productivity**
  Doing anything new requires a little learning. Our technical team provides support from the outset to optimise productivity.

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**Need a custom blend?**
We work with our customers on collaborative projects to deliver market-changing opportunities. Our specialist technical team can work with you to develop custom blends with properties to suit your exact requirements.
Research and development

Continual product innovation

Our R&D activities are tightly focused on tackling the intrinsic synthesis of bioplastics that currently keeps costs high and limits performance. Responding to these challenges will enable us to accelerate the adoption of innovative, natural plastics across an even wider range of markets.

Investigating lignin

Biome Bioplastics is conducting research into a new, plentiful source of organic chemicals for the manufacture of bioplastics that could significantly reduce costs, expand functionality and increase performance.

Backed by a grant from the Technology Strategy Board (TSB) and working in partnership with the University of Warwick’s Centre for Industrial Biotechnology and Biorefining, we are conducting a pioneering project to investigate the possibility of using lignin as an alternative, bio-based source of aromatic chemicals.

Biome Bioplastics personnel are working with the Warwick team to develop methods to control the lignin breakdown process to determine whether these chemicals can be extracted in significant quantities. The initial feasibility project will replace the oil-derived equivalent currently used in a polyester that conveys strength and flexibility in some of our products.

Building on this work, we are exploring the possibilities for deriving a wide selection of bio-based aromatic chemicals from lignin as the foundation for the next generation of bioplastics.

Industrial biotechnology

Industrial biotechnology is firmly supported by the UK government as a means of developing less carbon intensive products and processes. It poses a significant opportunity for the UK’s chemical sector to maintain and increase its competitiveness through the development of efficient and sustainable ways of satisfying our chemical and material needs. We are always interested in hearing from potential partners for collaborative opportunities in the industrial biotechnology field.

Product development

Backed by an extensive patent base and industry knowledge, we often work with our customers on collaborative projects to deliver market-changing opportunities. Our commercial team works with brand owners and their converters to realise their ambitions. We have a comprehensive range of lab facilities that allow us to test material performance and run pilot manufacturing and application tests on prototype products. Our bioplastics are considered the ‘best-in-the-market’ for use on conventional processing equipment, but we encourage our customers to work with our support team on their first production run.

Robust estimates of the global industrial biotechnology market by 2025 range from £150 billion to £360 billion; similar estimates for the UK industrial biotechnology market range from £4 billion to £12 billion.

Industrial Biotechnology Innovation and Growth Team, IB 2025 Report
Our team
We are proud to have built a core group of highly motivated scientists and business people with considerable experience of natural polymer chemistry and product performance, as well as the passion to deliver results. As we continue to grow, our objective is to recruit and retain a team that is recognised as head and shoulders above the competition in application and product engineering.

Group
Biome Bioplastics is a wholly owned subsidiary of Biome Technologies plc, a fast growing technology business quoted on the AIM market of the London Stock Exchange. More information on Biome Technologies plc, including our investor relations area, can be found at www.biometechnologiesplc.com.

Our passion is delivering innovative polymers that combine impressive performance with strong sustainability credentials.

Paul Mines, CEO, Biome Bioplastics

Offering
Service
We pride ourselves on offering a friendly and approachable commercial and technical service. Our sales teams cover Europe and North America, and are serviced by product warehousing on both continents.

Support
We provide operating guidelines along with telephone and on-site support throughout the testing and production process.

Innovation
Building on our research and development activities, we continue to launch new, innovative products tailored to the exact needs of our customers.

Capacity
We have a broad and resilient supply chain that is well placed to manufacture and deliver a wide range of high-performance biopolymers to a global market.

Development partners
Our development mission is to be at the forefront of bio-based polymer innovation, producing materials that can challenge the dominance of oil-based plastics and ultimately replace them completely.

We are pleased to work in partnership with a number of organisations that are committed to materials innovation and the realisation of a bio-based economy.
Get in touch to find out how our bioplastics can improve both the quality and sustainability of your products.

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