



ecovative

## Ecovative

Ecovative is a leading biomaterials company growing high performance, premium, award-winning products that are safe, healthy, and certified sustainable using mushroom materials. Ecovative products enable customers to meet their design, production, and delivery needs while achieving sustainability goals which help their company and products become greener.

Ecovative's core mission is to envision, develop, produce, and market Earth friendly materials, which, unlike conventional synthetics, can have a positive impact on our planet's ecosystem. They have committed to working with industry and consumers to rid the world of toxic, unsustainable materials. They believe in creating products that enable companies and individuals to achieve their sustainability goals, without having to sacrifice on cost or performance.

Hazardous wastes are toxic by-products created by many traditional types of industries, such as manufacturing. The waste can be in many forms (e.g. liquid, solid, or sludge), and can contain chemicals, heavy metals, radiation, dangerous pathogens, or other toxins which can be harmful to both the environment and human health.

Ecovative products are inspired by the natural form and biology of an amazing and versatile substance called mycelium which is produced by fungi (mushrooms). The company have used this natural form as a starting point for their design and from this have developed their vast range of products. The production process mimics natural cycles such as found in woodlands and grasslands. These natural systems are 'closed loop' meaning all the material is re-used and therefore there is zero waste. In essence, when the product is finished with, it can be returned to nature where it is broken down by soil bacteria and becomes part of the food chain again.

Ecovative also promote upcycling: the reusing of unwanted objects and materials in such a way as to create a product of higher quality or value than the original. For example, in their production of hand sails, they refine and process materials which cannot biodegrade and make them into other products. By doing so, they are also helping to reduce build-up of toxic materials.

## Waste Packaging in the UK

The UK alone produces more than 170 million tonnes of waste every year, much of it food packaging. It can take 450 years for some types of plastic bottle to break down. Styrofoam, a common material used for packaging and disposable food and drink containers, takes a long time to break down. In addition, many of the chemicals used during the manufacturing of Styrofoam are toxic.

It is estimated that only a third of plastic packaging is recycled with much of the remaining going to landfill.

The EU Packaging and Packaging Waste Directive is the main piece of legislation governing packaging and packaging waste in Europe. This legislation calls for industries to keep continuously improving the environmental performance of the packaging they produce in the hope that we see a decline in the impact on the environment. The Directive was adopted in 1994 and is reviewed every 10 years, most recently in 2015

The grocery sector accounts for about 70% of the packaging market and every year around 10 million tonnes (mt) of packaging is used in the UK. About 4.9 mt is household related and, if it isn't reused or recycled, can end up in landfill.

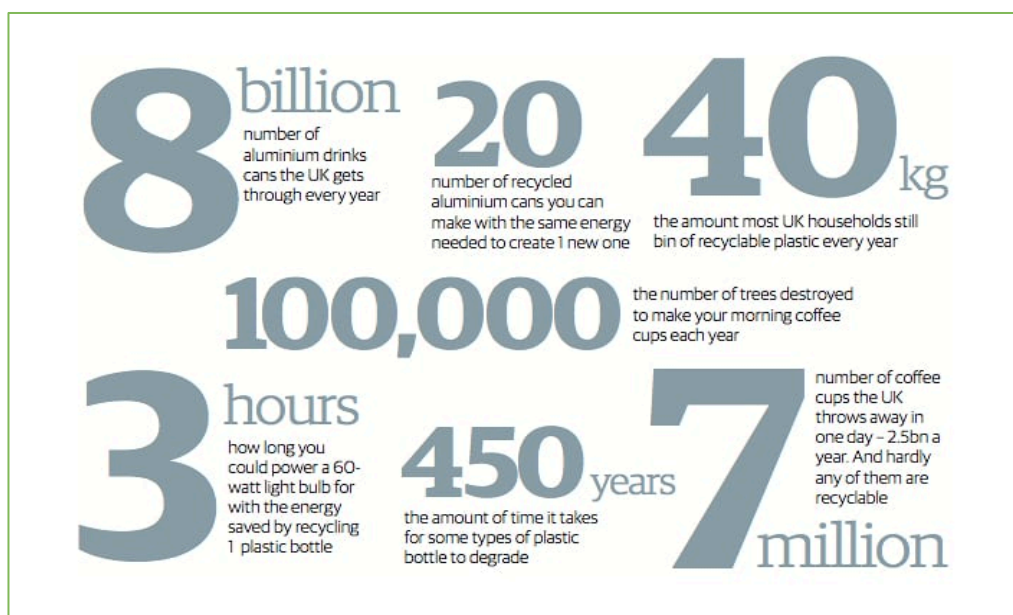


Image: Fullarton Connexions <http://fullartonconnexions.co.uk/blog/litter-louts/>, accessed 01/08/2018



*Commonly used Styrofoam can take more than 500 years to decompose and in some forms can last forever*



*It is estimated the UK will reach its maximum landfill capacity by 2018*

## Ecovative Mushroom Products



### MycoBoard

MycoBoard is a premium, customisable, certified sustainable, engineered low-density core for wood products. It is bound together using mycelium – “nature’s glue”. This versatile, non-toxic engineered wood, which offers fire-resistant properties, can be moulded into custom shapes.



### MycoFoam

This product replaces plastic foams like Styrofoam with an Earth friendly alternative. This Mushroom® Packaging is a protective packaging product used by companies like Dell and Stanhope Seta. They are also developing Mushroom Insulation, acoustics, core materials, and aquatic products.



### GIY (Grow It Yourself)

Its current applications include teddy bears, balls, an “anything you can imagine!” The have a Grow It Yourself program which is a chance for you to create your own projects and products with their raw material!



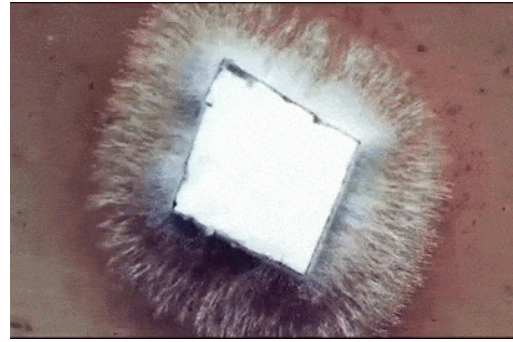
### MycoFlex

Their newest biopolymer material is made entirely of mycelium! They are developing it today through grant funding as a replacement for all things cushiony — shoe soles, seat cushions, yoga mats, lightweight core materials, and a variety of other uses.

## What is Mycelium?

It's the threadlike part of a fungus that lives in the soil or in places that it can thrive in.

Mycelium is the main part of a fungus and mushroom. It behaves similar to the neurons of the human brain, allowing it to grow into a living web-like network that adapts to its environment.



## LFN Principles Supported

- Waste = Food – Waste materials like dead organic matter are cycled in nature.
- Diversity gives strength – In nature organisms have a range of sizes, features and complexities. Similarly, we can design products for more than one purpose and utilise natural adaptations.



## What are the Benefits of Using Mushroom Materials?

- Ecovative are also utilising the natural water resistant (hydrophobic) properties of mycelium. Given the chance to dry out, their products are likely to remain undamaged
- Mycelium is naturally fire resistant and therefore their products are utilising natural adaptations for a different purpose. It is also very strong and rivals the strength of other products which perform the same purpose.
- It is free of toxins and other harmful substances, so once it is disposed of it doesn't have any negative side effects on the environment.
- They are naturally hydrophobic so they have water-resistant properties.

## Useful Links and Videos

<https://www.youtube.com/watch?v=w6VAakle-Eo>

[http://www.cbs.com/shows/cbs\\_evening\\_news/video/gDm1cVzn\\_RYyMsxWnbC30vJ20T6g5Vms/an-eco-friendly-alternative-to-styrofoam-packaging/](http://www.cbs.com/shows/cbs_evening_news/video/gDm1cVzn_RYyMsxWnbC30vJ20T6g5Vms/an-eco-friendly-alternative-to-styrofoam-packaging/)

<http://www.wrapni.org.uk/content/reusable-packaging-and-product-reformulation>

Other similar case studies – Queen’s University Belfast – how to turn by-products from banana plants into plastics.

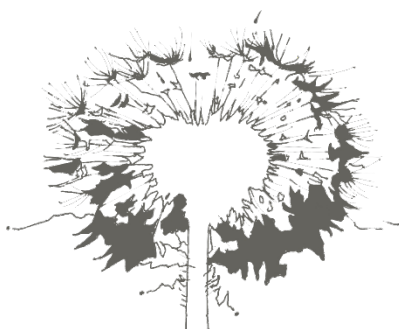


For more information on Ecovative, visit their website at;

<https://www.ecovatedesign.com/>

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Ecovative also have certification; **Cradle to Cradle™ Gold Certified and Living Future Declare Certified.**



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