

# Make up the breakdown

It can take decades for carrier bags to decompose, but **Add-X Biotech** has made an ingredient that can degrade plastic waste in months. Markus Jörgensen, CEO, and Eugen Mössner, CTO, explain their product to *Packaging and Converting Intelligence*.

**A**ll around the world people are walking home from shops carrying their groceries in plastic bags. But in one single day thousands of these bags are used and then thrown out. This issue has gained excellent visibility thanks to campaigns about reusable shopping bags. But the problem remains: what to do about the hundred million tonnes of plastic waste that are created every year?

Add-X Biotech has been producing oxo-biodegradable additives for several years, beginning with organic ingredients. Markus Jörgensen, CEO of the Swedish company, was drawn to the issue out of personal concern.

“As in many businesses, you stumble on something that you feel is really interesting,” he says.

Through extensive investment in R&D, Add-X has stormed to the forefront of its sector with its additive AddiFlex®. Using this ingredient to manufacture plastic products makes them break down faster and more controllably, thereby reducing the amount of waste and litter in the environment.

## Green wave

The business is driven by a passion for green technology. Jörgensen’s main motivation is the two-pronged attack he launches on the waste problem. His brand raises awareness of the problem and at the same time it contributes to fast plastic degradation. He feels that the time is ripe for Add-X Biotech to grow.

“Using AddiFlex to manufacture plastic products makes them break down faster and more controllably, thereby reducing the amount of waste in the environment.”

“The ‘green wave’ is finally getting to the markets where our product is used and more companies are aware of the outcome of their production,” he says.

The product is also not limited to plastic bags, but all kinds of packaging, and this gives the company a range of potential partners to work with.

Although the company works in the packaging industry, its priority is not creating more waste, but looking for practical solutions to what is already being produced.

“We do not support the littering, but we feel that the



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road to recycling and litter prevention is long,” Jörgensen adds. “It must be better that the litter such as plastic bags will be broken down to biomass, leaving no harmful residues instead of laying around in nature.”

Eugen Mössner, Add-X’s CTO, is interested by the lack of legalisation around the global plastic problem.

“The majority of all countries do not have any industrial composting facilities, sufficient recycling or other recovering technology,” he says. “However, they are faced with the problem of littering.”

He knows that his product makes a massive difference to the environment wherever it is incorporated into plastic products. The rapid disintegration and the biodegradation of applications using the AddiFlex system help to reduce littered waste by around 80-90%. The remnant is natural biomass.

## Outstanding abilities

Jörgensen is confident that his product stands out. The additive is well-researched, well-tested and unique.

“We, as well as our competitors, aim at making a product as good and effective as possible,” he says. “It is of great importance that the end product that is manufactured using our product will correspond to the promises we make – this is something that we honour.”

He refers back to the research: “Our product consists of a specially designed researched mix of ingredients that have been tested carefully at certified labs by our team including some of the world’s most renowned professionals within this area.”

AddiFlex makes plastic more biodegradable. Degradation performance in an AddiFlex-adapted product can be adjusted together with the customer. The polyolefin oxidises and, together with the polymer, gets digested by microbes. Heat, sunlight and stress accelerate the process.

Plastics containing the additive break down much faster than ordinary plastics. Some packaging made with AddiFlex can degrade in as little as six weeks under UV-weathering conditions. For run-of-the-mill plastics, degradation could take anything from a couple of years to over a century. Consumers are advised to re-use the bags. Mössner explains that there are numerous cost benefits to be gained by using AddiFlex in plastic manufacturing.

“The overall system approach of Add-X Biotech supports the industry’s pursuit for inexpensive performance production by promoting the combination of let down polymer AddiFlex as the functional component, plus mineral modifiers,” he says.

“There are several indirect advantages: faster production, better UV degradation, lower costs, less CO<sub>2</sub> creation in degradation and higher mechanical values.”

Consider that plastic ingredients vary in the amount of energy they need to decompose, and the difference is clear. The recipe that Add-X BioTech suggests is a mixture of polymer, AddiFlex and 20% of a mineral modifier like chalk. Plastic made to this specification needs an energy input of just 23.5MJ per kilogramme, much less than the rates other materials need to break down. This input can fall to as little as 15.15MJ per kilogramme if mineral modifier is 50%.

“The indirect advantages are several,” Mössner adds. “Faster production, better UV degradation, lower cost, less CO<sub>2</sub> creation in degradation and higher mechanical values. There are no toxic by-products in the degradation either. It’s important to note that polyethylene and polypropylene are not listed by the Environmental Protection Agency (EPA) in the US as a hazardous or toxic substance, nor are they listed in any similar lists in Europe. All polyolefines degrade as a result of oxidation in a manner similar to natural products such as rubber and lignin.”

The lack of toxicity is confirmed by several studies into the mineralisation of compounds. The primary mechanism of the breakdown of polyolefines is initially oxidation or photo-oxidation, which occurs in a manner similar to oxidative rancidity of food. The active ingredients in AddiFlex are metal salts that are not classified as heavy metals.



German distributor Ter Hell is working with Add-X Biotech to expand the market for the AddiFlex System.

#### Distribution partnership

The company linked up with Ter Hell, a new Hamburg-based distributor, at the beginning of 2010.

“Ter Hell is a company with great experience from trading and selling and we are happy to have been able to partner up with them,” says Jörgensen. “They have since the beginning showed great interest in our product and have already proved that they have got what it takes to make AddiFlex grow in the market.”

Both Add-X Biotech and Ter Hell are confident that they can grow sales of AddiFlex beyond the current levels. In cooperation with Ter Hell, Add-X Biotech is now represented in over 30 countries and they keep increasing. Over the next two or three years it plans to keep growing and expanding, same as it always has. Jörgensen is confident of growth.

“We have a strong focus on opening up new markets for AddiFlex and I am convinced that we will succeed with this,” he says. “I am certain that within the next few years we will have increased our sales immensely, and that we will remain within the top brands when it comes to oxo-biodegradable products.”

The CEO believes the market is expanding simply because businesses have realised that they have a choice to make.

“Companies around the world are becoming more aware of these kinds of products,” he says. “I think we will experience a very strong shift towards the use of our kind of product within this coming period.” ■

**Further information**  
Add-X Biotech  
[www.add-xbiotech.com](http://www.add-xbiotech.com)

