

Accelerating the
biodegradation process
with sustainable yarns



YARNAWAY™

by

ANTEX

As a result of economic growth and the impact of consumer society, the ecosystem is increasingly threatened.

Biodegradation

Biodegradation is a process in which the molecular structure of materials is broken down through metabolic or enzymatic processes. The decomposition process occurs through enzymes secreted by microorganisms, naturally present in anaerobic (without oxygen) and aerobic (with oxygen) environments that work alone or in colonies and play a vital role in our ecosystem, and not only in the biodegradation process.

Biomass (humus) and biogas (carbon dioxide and methane) are the products generated in a biodegradation process.

While initial biodegradation in nature is aerobic, the main bioreaction in landfills is anaerobic biodigestion. Landfill microbes break down organic matter and reduce its volume or mass.

Yarnaway yarns are modified by a mixture of organic compounds that do not interfere with the properties of the final product, whether they are textured yarns, solutiondyed or package dyed colours, as well as storage and use in general textile processes. In other words, lifespan and performance during use remain unchanged compared to any polyester yarn.

Only when Yarnaway yarns are exposed to an environment that has moisture and microorganisms, such as a biologically active landfill, will the polymer change process begin.

ASTM / ISO Test methods and specifications for biodegradation of plastics

For anaerobic biodegradation, the ASTM D5511 test method, equivalent to ISO DIS15985 (International Standards), is widely used to determine biodegradation under conditions of high solids content. It determines the degree of biodegradation of plastic materials and is representative of the conditions of biologically active landfills.

The ASTM D5511 analysis method under which the Antex Yarnaway yarns were analyzed showed that the Yarnaway yarns are anaerobically biodegradable. During the 106 days of the standard test evaluation, there was a biodegradability of approximately 20% of the samples of the textured yarns, while the normal polyester counter test remained unchanged.

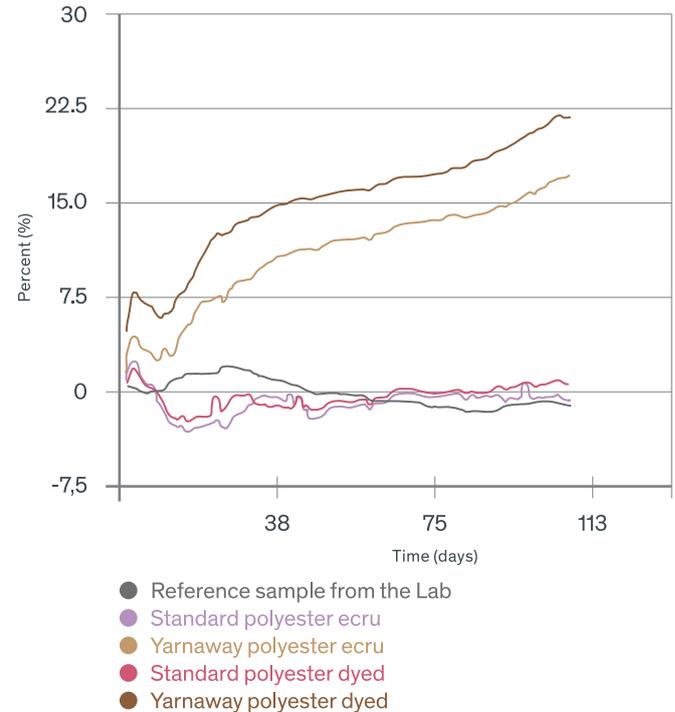
Polyester is estimated to take about 300 years to decompose in the environment. **Yarnaway yarns dramatically reduce the decomposition period to an estimated time of 3 to 5 years.**

TESTED BY

Eden Research Laboratory

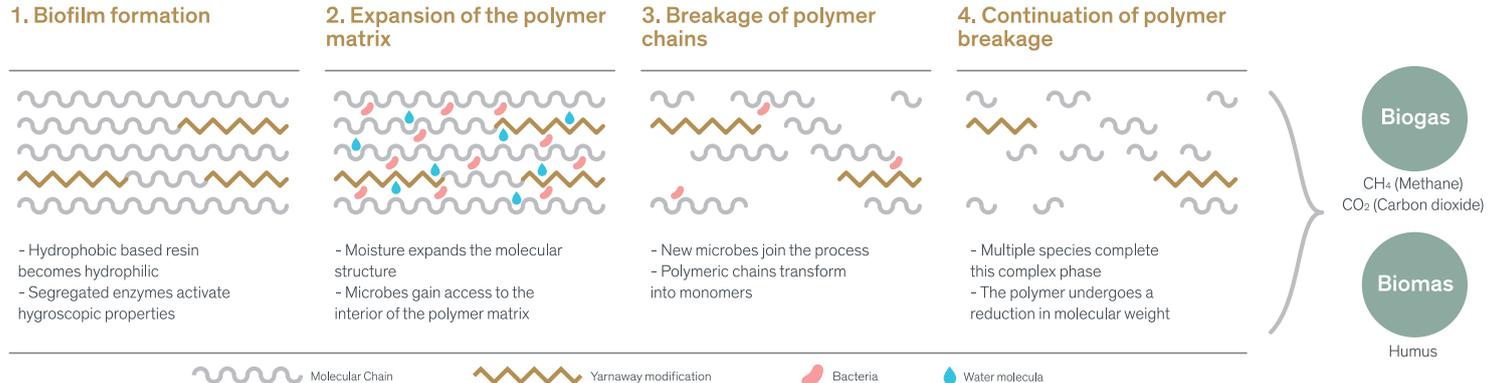
Biodegradation

Approx. 20% biodegradation after 106 days (ASTM D 5511-18)



Yarnaway™ process

At a schematic level, the biodegradation process of the Yarnaway threads would be as follows:



Biodegradation is one of the options to combat the large amount of plastic waste that ends up in landfills. Yarnaway yarns offer a unique solution to increase biodegradation in biologically active landfills, based on laboratory tests and scientific evidence.

Yarnaway yarns can be recycled into new textile or plastic materials. At Antex we recommend whenever possible to opt for ways of recycling waste, but we are aware that there is still much to be developed in this area and in the design of textile products, which is why we believe that Yarnaway can help reduce the impact of industry and textile products on the environment.



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