EcoPaXX®
The green performer
The bio-based carbon neutral polyamide
Bio-based materials

“As global concern continues to increase about the fossil fuel economy, and as both consumers and regulators call for greener materials, we’re actively working to create high-performance products with lower environmental impact,” says Kees Tintel, Business Manager EcoPaXX® at DSM.

“We already offer products that are 70% bio-based, and which show superior performance. Our longterm goal is to create performance materials made from 100% renewable resources.”

Eco+ solutions

DSM offers an entire range of Eco+ solutions designed to contribute to a greener planet. Our portfolio includes halogen-free products, recycle-based products and bio-based high-performance polymers. Furthermore we offer materials that eliminate the use of hazardous substances, and those that extend a product’s serviceable lifetime, or offer significant reductions in weight or friction to deliver a low or neutral carbon footprint.

EcoPaXX is a high-performance polyamide that outperforms both green and traditional polyamides in the most demanding environments. The material is carbon neutral from cradle to gate, and is predominantly made from renewable castor bean oil.

Partnership

“We see our customers as partners, and support them through the entire design and implementation process,” says Kees. “Our customers face increasing pressure from consumers and regulators to lower the environmental impact of their products. We’re doing everything we can to provide them with greener materials that don’t compromise on performance. Our Eco+ solutions combine with our customers’ innovative application designs to create a brighter future for everyone.”

A brighter future with engineering plastics.

At DSM, we build our business around creating brighter lives for people today and for generations to come. We focus our research and innovation on creating high-performance products that meet the current and future needs of our customers, while helping them to reduce the environmental impact of their applications. Our innovative materials help to save energy, reduce reliance on fossil fuels in a shift towards the use of renewable resources, and drastically reduce the carbon footprint of the products people use every day.
EcoPaXX: The high-performance polyamide that’s carbon neutral.

High Performance. Zero carbon footprint. EcoPaXX is a high-performance resin with a neutral carbon footprint. Approximately 70% of the polymer’s building blocks are derived from the castor bean plant (Ricinus Communis), a renewable resource. Castor plants grow in tropical areas and produce well in relatively poor soil conditions. There is no direct competition with the food chain.

EcoPaXX has been proven to be carbon neutral from cradle to gate, meaning that the carbon dioxide (CO$_2$) generated in producing the polymer is completely compensated by the CO$_2$ absorbed during plant growth.

Cradle to Cradle
EcoPaXX holds the silver Cradle to Cradle® certification from world-renowned sustainable design firm McDonough Braungart Design Chemistry. Additional information on the sustainability of EcoPaXX can be found in the Environmental Product Declaration.

Top performance
EcoPaXX polyamide 410 (PA410) is a long-chain polyamide with exceptional performance in even the most demanding environments.

The material has excellent mechanical properties, high heat stability, excellent thermal stability for a broad processing window, low moisture absorption for good dimensional stability, high stiffness after conditioning, relatively low density for weight reduction, and good hydrolytic and chemical resistance.

This high-performance material is ideally suited for internal framing applications in consumer electronics, under-the-hood automotive applications such as cooling systems and engine covers, automotive safety systems including car seats and airbag systems and sports and leisure. It can also be extruded to create strong, transparent films, or to create mono- and multi-filaments for all kinds of industrial and consumer-related applications.

EcoPaXX surpasses other green polyamides with:
- substantially higher melting point
- high stiffness and strength
- fast injection molding cycles and large processing window for increased productivity.

It outperforms traditional PA6/PA66 with:
- significantly lower moisture absorption
- better dimensional stability
- improved stiffness and strength retention after conditioning
- superior resistance to hydrolysis and chemicals such as oil, grease and salts.

EcoPaXX offers key advantages over both traditional and “green” polyamides, and is an ideal choice for applications in the automotive, electrical and electronics, and sports and leisure markets.

Consumer electronics:
- Lightweight with high stiffness (dry/wet)
- Good processing and flow

Automotive (under-the-hood):
- Hydrolysis and chemical resistant
- High stiffness and impact resistant

Automotive (engine covers):
- Excellent surface
- High temperature resistance

Sports and leisure:
- Excellent paintable surface
- Impact resistant

Automotive (safety systems):
- Excellent impact resistance
- Superior mechanical performance

Film:
- Good barrier to oxygen and grease (wet)
- Excellent puncture resistance

Monofilaments:
- Can be oriented for strength and resilience
- Hydrolytic resistance and property retention when hot/wet

Tubes and hoses:
- Heat resistant in air
- Hydrolysis and chemical resistant

Method: IPCC 2001 GWP 100a V1.02 / characterization
External validations done for EcoPaXX® by PE int. and EPEA.
LCA ISO 14040, Cradle-to-Cradle (Silver cert.), EPD introduction.
Excellent mechanical properties for demanding application environments.

Extremely resistant
EcoPaXX has a high melting point of 250°C, providing excellent heat resistance. The material has very good thermal resistance, it also has excellent resistance to hydrolysis and chemicals, including salts such as calcium chloride, making it an ideal choice for under-the-hood components where these characteristics are key. In impact resistance tests, EcoPaXX performs at least on par with PA6/PA66.

High crystallization
The material's high melting point and rapid crystallization rate ensure quick injection molding cycles, meaning you can optimize your productivity with faster throughput. It also offers a broad processing window for flexibility on the production floor.

Exceptional mechanical properties
EcoPaXX offers significantly lower moisture absorption than PA6 and PA66 for improved dimensional stability. Its low rate of water vapor transmission and fuel permeability combine with very high puncture resistance to create good barrier lms with transparency on par with PA6 and less haze.

Partnering for a brighter future
At DSM, we actively seek to partner with customers to improve the environmental impact of their applications in a cost competitive way.

Our portfolio includes a wide offer of grades with best-in-class performance at extreme operating temperatures, while considerably extending service lifetimes. We back all of our material sales with extensive research and development, as well as a collaborative partnership where we support you through grade selection, design and testing.

DSM offers a growing portfolio of composite resins and engineering plastics suitable for a range of industrial applications and sectors, including EcoPaXX®, Palapreg® ECO and Arnitel® Eco.
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