EcoPaXX®
AM4001 GF (G)

EcoPaXX® AM4001 GF (G) is the first 3D printing polymer for fused granulate fabrication (pellet printing) based on DSM's established bio-based engineering material EcoPaXX®. A combination of DSM's proprietary technology and the power of nature's building blocks derived from castor oil, EcoPaXX® AM4001 GF (G) is ideal for structural parts combining mechanical performance with thermal resistance.. As a 3D printing optimized version of the same material as used in their end-use parts, it is a fit-for-purpose material that delivers on performance and sustainability.

- **Bio-based PA410 polymer for fused granulate fabrication**
- **Excellent mechanical and thermal properties and high chemical resistance with low moisture uptake**

Producing tooling and structural parts using additive manufacturing shortens production time and makes geometry or internal structure changes easier as it eliminates steps in the production process. As such, it can reduce cost throughout the entire product lifecycle, from component production and assembly, to vehicle testing and low volume vehicle production. Car manufacturers can meet two sustainability goals at once:by using sustainable polymers: lower emissions standards by building lightweight cars and reduce manufacturing carbon footprint.

EcoPaXX® AM4001 GF (G) combines excellent thermal and mechanical properties with low moisture uptake and excellent chemical resistance. This makes it especially suitable for applications that require good mechanical performance after conditioning, thermal and chemical resistance and good surface properties. Additionally, EcoPaXX® AM4001 GF (G) is easy to print and post-process.

A polyamide PA410, EcoPaXX® AM4001 GF (G) is based on DSM's bio-based, industry-leading engineering material used in traditional manufacturing for industrial applications. The material combines DSM proprietary polyamide technology with building blocks derived from castor oil that does not compete with the food chain. The result is a sustainable pellet material with 42% bio-based content based on ISO 16620-1 2015(E).

Product features

- >40% bio-based material derived from castor oil which does not compete with food chain
- Excellent mechanical properties such as high modulus and tensile strength due to low moisture uptake combined with a high crystallinity
- Excellent thermal and hydrolysis resistance
- Dimensional stability due to <40% lower moisture uptake vs PA6
- Highest melting temperature of bio-polyamides (PA)
- Chemical resistance against harsh fluids
- Easy printing and post-processing
- Abrasion resistance
- Available in black

Applications

- Structural lightweight parts
- Tooling for production such as jigs & fixtures
- Components in contact with fuel
- Components needing to resist wear and friction

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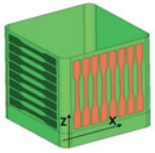

Mechanical Properties	Value	Unit	Test method
Tensile Modulus (3D printed: flat x-x direction)	9400	MPa	ISO 527-1/-2
Tensile Modulus (3D printed: on-edge x-z direction)	4560	MPa	ISO 527-1/-2
Stress at break (3D printed: flat x-x direction)	165	MPa	ISO 527-1/-2
Stress at break (3D printed: on-edge x-z direction)	23	MPa	ISO 527-1/-2
Strain at break (3D printed: flat x-x direction)	2.1	%	ISO 527-1/-2
Strain at break (3D printed: on-edge x-z direction)	0.5	%	ISO 527-1/-2

Thermal Properties	Value	Unit	Test method
Melting temperature (10°C/min)	250	°C	ISO 11357-1/-3
Glass transition temperature	58	°C	ISO 11357-1/-3
Temp. of deflection under load (1.80 MPa)	190	°C	ISO 75-1/-2
Temp. of deflection under load (0.45 MPa)	230	°C	ISO 75-1/-2

Other Properties	Value	Unit	Test method
Water absorption	4	%	Sim. to ISO 62
Humidity absorption	1.5	%	Sim. to ISO 62
Density	1350	kg/m³	ISO 1183
Bio-based content	42	%	ISO 16620-1 2015(E)

1 Based on IM bars

For more information and buying options, please visit www.dsm.com/additive-manufacturing/

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