

Cellulose Nanofiber Reinforced POM

Biobased Filler-reinforced Polyacetal with Excellent Mechanical & Sliding Properties

Material Properties

- Lightweight
- Excellent mechanical properties
- Excellent friction properties and low abrasion
- Rigidity at high temperatures

Properties	Test Conditions	Units	POM copolymer non-filler	POM/CNF10%
Density		g/cm ³	1.41	1.41
Tensile strength (TS)	23°C	MPa	62	84
Tensile modulus (TM)	23°C	MPa	3000	5300
Tensile elongation (TE)	23°C	MPa	41	5
Flexural strength (FS)	23°C	MPa	94	122
	80°C	MPa	40	62
Flexural modulus (FM)	23°C	MPa	2900	5200
	80°C	MPa	1100	2900
Charpy impact strength		kJ/m ²	11	7
Load deflection temperature	1.8MPa	°C	96	131

Current development data may change without notification. The data stated are measured values, not guaranteed values.

Sustainability

- Raw material of CNF is cotton linter derived from non-edible plants
- Mechanical recyclability of CNFRP is superior to that of GFRP
- No use of grease for process reduction
- Improved component life
- Monomaterial sliding components for easier recycling

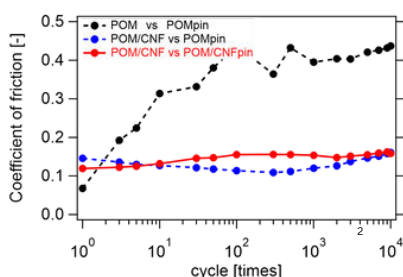


Cellulose Technology

For more than 90 years Asahi Kasei has been using cotton linter, a byproduct of the cotton yield, as raw material for various products. Building on this rich know-how, the company is now adapting this material as high-performance filler for POM, contributing to improved mechanical properties and sliding behavior. Using POM/CNF as a sliding part, even when sliding against surfaces of the same material, it operates quietly with low friction and abrasion. It contributes not only to product downsizing, but also to monomaterial solutions.

Application Fields

- Gear parts, Sliding parts



POM/CNF has excellent sliding properties even between the same material and under greaseless conditions.

Cellulose Nanofiber Reinforced PA for 3D Printing

Biobased Filler-reinforced Polyamide for Achieving Excellent Formability and High Strength



Cellulose Technology

For more than 90 years Asahi Kasei has been using cotton linter, a byproduct of the cotton yield, as raw material for various products. Building on this rich know-how, the company is now adapting this material as for 3D printing.

The unique viscosity properties of cellulose nanofibers (CNF) reinforced polyamides make them suitable for material extrusion 3D printers. Furthermore, compared to glass fibers, CNF boasts a superior material recyclability.

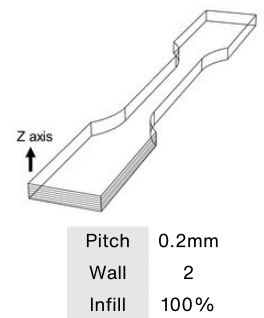
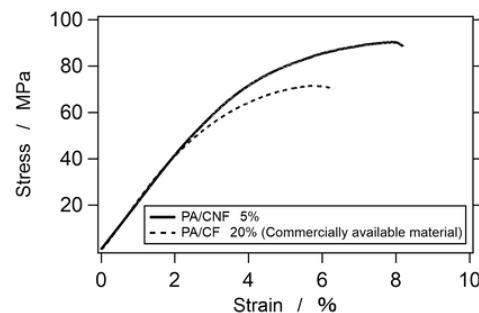
Application Fields

Material extrusion 3D printing for prototypes, industrial products, etc.



Key Properties for 3D Printing

- Good formability
- High modeling accuracy
- Smooth appearance
- Excellent mechanical properties
- Color-variable



Sustainability

- The raw material of CNF is cotton linter derived from non-edible plants
- Mechanical recyclability of CNFRP is superior to that of GFRP
- Can be combined with various types of PA
 - e.g., Combining our biomass polyamide (PA610) with 10% CNF gives a biobased material ratio of 65%