Braskem 3D Printing Products and Properties



Passion for Transforming

As the leading producer of thermoplastic resins in the Americas and the world's largest producer of biopolymers, Braskem is constantly innovating by launching new products in partnership with clients, bringing improvements to society and the environment.



Braskem 3D Labs

Let us help you develop your next 3D Printed Solution.



Rapid Prototyping Lab

Braskem's comprehensive and advanced polymer production and characterization capabilities combined with an array of stateof-the-art 3D printing equipment is dedicated to enabling the design of new, ready-to-print materials and supporting customers. The 3D printing labs are located in Americas.

Braskem's development of advanced 3D printing materials is powered by strategic partnerships with industry leaders and academic institutions. These partnerships further enable rapid solutions development for the industry.



Braskem 3D Labs

- USA Pittsburgh, PA
- Brazil Triunfo, RS

Braskem's history as a leader in polyolefin production is now powering the next generation of materials for the Addictive Manufacturing industry. Braskem's global team of experts are well-equipped to enable rapid material solutions for various industries and applications.



Joint Product Development



Braskem's team of experts has a global presence with locations in North America, South America, Europe, and Asia. With expertise in chemistry, engineering, design, and production, our team of experts can optimize 3D printing materials for many industries and applications.





Braskem filaments are designed with the end user in mind; they are a great choice for light-weighting, optimizing geometries, designing spare parts, as well as functional prototyping.

Property comparison chart

	Average Density	Tensile Strength at Yield	Tensile Elongation at Yield	Young's Modulus	Flexural Modulus	Charpy Impact at 23° C°
Method	D 792	D 638	D 638	D 638	D 790	ISO 179
Units	g/cm³	MPa	%	MPa	MPa	kJ/m ³
FL100PP	0.91	16	12	1470	850	13.5
FL105PP	0.89	11	17	1020	840	11.7

Polypropylene Products for 3D Printing

Experience the Difference

Polypropylene is the perfect solution for 3D printing. Braskem's broad portfolio of polypropylene (PP) materials offers many solutions for a variety of 3D printing technologies, including fused filament fabrication (FFF), selective laser sintering (SLS), and high-speed pellet extrusion.

Our polypropylene filaments, powders, and pellets have been engineered specifically for 3D printing, making them easy to print and set up. Unlike traditional 3D printing materials, polypropylene has an inherently low density, is chemically resistant, and provides a balance between strength and impact resistance.



Our filaments are available in both 1.75 mm and 2.85 mm diameters to fit a wide range of printer technologies.

3D Printing Products and Properties

FL100PP

FL100PP is a polypropylene (PP) filament with inherently low density, high fatigue, and high moisture resistance for use in Fused Filament Fabrication (FFF).

This filament provides a balance of strength and impact resistance while enabling the production of relatively high strength, water tight, lightweight, and chemically resistant parts.

Printed Part Properties

Parameter	Method	Units	Value
Average Density	D 792	g/cm²	0.91
Tensile Strength at Yield	D 638	MPa	16
Tensile Elongation at Yield	D 638	%	12
Young's Modulus	D 638	MPa	1470
Flexural Modulus – Chord Modulus	D 790	MPa	850
Charpy Impact Strength at 23°C	ISO 179	kJ/m ¹	13.5
Deflection Temperature (at 0.455 MPa)	D 648	°C	90
Vicat Softening Temperature (at 10 N)	D 1525	°C	140

Note:

Printed part properties obtained using test specimens printed in X-Y direction under the following conditions: printing temperature 220°C, bed temperature 20°C, print speed 4000 mm/min, 75% of grid (\pm 45°) infill, 3 perimeter layers, 0.35 mm nozzle and 0.15 mm layer height



Notes

- 1. This resin does not contain the substance Bisphenol A (BPA, CAS: 80-05-7) in its composition.
- 2. For information on about safety, handling, individual protection, first aids and waste disposal, please see SDS.



FL105PP is a polypropylene (PP) filament designed to provide superior dimensional accuracy, inherently low density, high fatigue strength, and high moisture resistance for use in Fused Filament Fabrication (FFF).

Printed Part Properties

Parameter	Method	Units	Value
Average Density	D 792	g/cm²	0.89
Tensile Strength at Yield	D 638	MPa	11
Tensile Elongation at Yield	D 638	%	17
Young's Modulus	D 638	MPa	1020
Flexural Modulus – Chord Modulus	D 790	MPa	840
Charpy Impact Strength at 23°C	ISO 179	kJ/m ¹	11.7
Deflection Temperature (at 0.455 MPa)	D 648	°C	93
vicat Softening Temperature (at 10 N)	D 1525	°C	130



Notes

1. This resin does not contain the substance Bisphenol A (BPA, CAS: 80-05-7) in its composition.

Additionally, FL105PP provides a balance of impact resistance and dimensional accuracy while enabling the production of watertight, lightweight, and chemically resistant parts.

Note:

Printed part properties obtained using test specimens printed in X-Y direction under the following conditions: printing temperature 220°C, bed temperature 20°C, print speed 4000 mm/min, 75% of grid (\pm 45°) infill, 3 perimeter layers, 0.35 mm nozzle and 0.15 mm layer height

2. For information on about safety, handling, individual protection, first aids and waste disposal, please see SDS.

3D Printing Products and Properties

Polypropylene **3D** Powders

Braskem, in a strategic partnership with Advanced Laser Materials (ALM), has developed its first line of powders for Selective Laser Sintering (SLS).

Through this collaboration we are able to offer solutions that can be leveraged by a broad array of manufacturing segments such as automotive, aerospace, packaging, consumer, and more.

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PP400

PP400 is a polypropylene (PP) powder with excellent material properties and dimensional stability. A balance of strength and impact resistance make it a great choice for automotive and aerospace applications.

PP400 is exclusively available through our partnership with Advanced Laser Materials (ALM) https://alm-llc.com/products/

Printed Part Properties

Relative Part Density	ASTM D 792	%	92 - 98
Tensile Strength at Yield	ASTM D638 (1 in/min)	MPa	20 - 25
Young's Modulus	ASTM D638 (1 in/min)	MPa	900 - 1300
Tensile Elongation at Yield	ASTM D638 (1 in/min)	%	20 - 30

Note: Preliminary data for the laser sintered parts in XY. Exact values depends on printer type and settings and are subject to change.



Braskem 3D pellets are specially designed for pellet extrusion 3D printing.

Property comparison chart

	Average Density	Tensile Strength at Yield	Tensile Elongation at Yield	Young's Modulus	Flexural Modulus	Charpy Impact at 23° C°
Method	D 792	D 638	D 638	D 638	D 790	ISO 179
Units	g/cm ³	MPa	%	MPa	MPa	kJ/m ³
GR100PP	0.91	16	12	1470	850	13.5
GR105PP	0.89	11	17	1020	840	11.7



Our unique formulations will increase overall printability and flow to ensure high quality prints. Contact us today to learn more.

GR100PP

GR100PP is a polypropylene (PP) pellet specifically designed for use in material extrusion 3D printing. This grade provides inherently low density, high fatigue, and high moisture resistance.

This PP pellet provides a balance of strength and impact resistance while enabling the production of relatively high strength, water tight, lightweight, and chemically resistant parts.

Printed Part Properties

Parameter	Method	Units	Value
Average Density	D 792	g/cm ¹	0.91
Tensile Strength at Yield	D 638	MPa	16
Tensile Strength at Break	D 638	MPa	12
Tensile Elongation at Yield	D 638	%	12
Tensile Elongation at Break	D 638	%	99
Young's Modulus	D 790	MPa	1470
Deflection Temperature (at 0.455 MPa)	D 648	°C	90
Vicat Softening Temperature (at 10 N)	D 1525	°C	140

Note: Printed part properties obtained from die cut tensile bars from a single walled box print. Tensile specimens were oriented parallel to the layer direction.

GR105PP

GR105PP is a grade of polypropylene (PP) pellets which provides an excellent balance of mechanical properties, dimensional stability, and chemical resistance for use in pellet based material extrusion 3D printers.

Printed Part Properties

Parameter	Method	Units	Value
Average Density	D 792	g/cm ¹	0.89
Tensile Strength at Yield	D 638	MPa	16
Tensile Strength at Break	D 638	MPa	13
Tensile Elongation at Yield	D 638	%	5
Tensile Elongation at Break	D 638	%	99
Young's Modulus	D 790	MPa	1245
Deflection Temperature (at 0.455 MPa)	D 648	°C	93
Vicat Softening Temperature (at 10 N)	D 1525	°C	130

Note: Printed part properties obtained from die cut tensile bars from a single walled box print. Tensile specimens were oriented parallel to the layer direction.

Notes

- 1. This resin does not contain the substance Bisphenol A (BPA, CAS: 80-05-7) in its composition.
- 2. For information on about safety, handling, individual protection, first aids and waste disposal, please see SDS.

Braskem does not guarantee printed part conditions. These numbers represent estimated values based on internal test

Notes

1. This resin does not contain the substance Bisphenol A (BPA, CAS: 80-05-7) in its composition.

This engineered PP grade provides a balance of strength and impact resistance while enabling the production of relatively high strength, watertight, lightweight, and chemically resistant parts.

2. For information on about safety, handling, individual protection, first aids and waste disposal, please see SDS.

With a global vision of the future oriented towards people and sustainability, Braskem is committed to contributing to the value chain for strengthening the Circular Economy.

The petrochemical company's almost 8,000 team members dedicate themselves every day to improve people's lives through sustainable chemicals and plastics solutions. Braskem has an innovative DNA and a comprehensive portfolio of plastic resins and chemical products for diverse segments, such as food packaging, construction, manufacturing, automotive, agribusiness, healthcare and hygiene, among others. With 41 industrial units in Brazil, the United States, Mexico, and Germany, and net revenue of R\$52.3 billion (US\$13.2 billion), Braskem exports its products to clients in more than 100 countries.

Braskem America is an indirect wholly owned subsidiary of Braskem S.A. headquartered in Philadelphia. The company is the leading producer of polypropylene in the United States, with six production plants located in Texas, Pennsylvania, and West Virginia, an Innovation and Technology Center in Pittsburgh, and operations in Boston focused on leveraging groundbreaking developments in biotechnology and advanced materials. For more information, visit www.braskem.com/usa.



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