

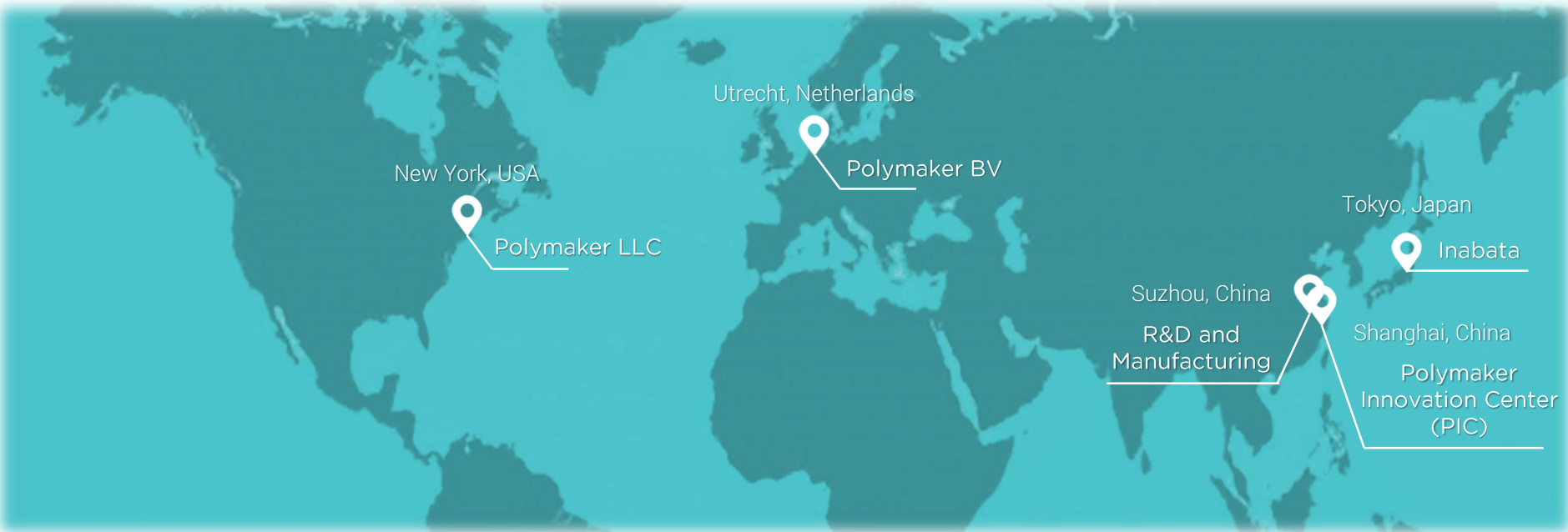
# Polymaker Industrial™ 3D Printing Materials

Updated Feb 2017



# About Polymaker

**Polymaker** is a 3D printing innovation company dedicated to enabling a better future with 3D printing. We achieve this goal by integrating advanced materials, additive manufacturing technologies, and design to meet the needs of today's industries and consumers.



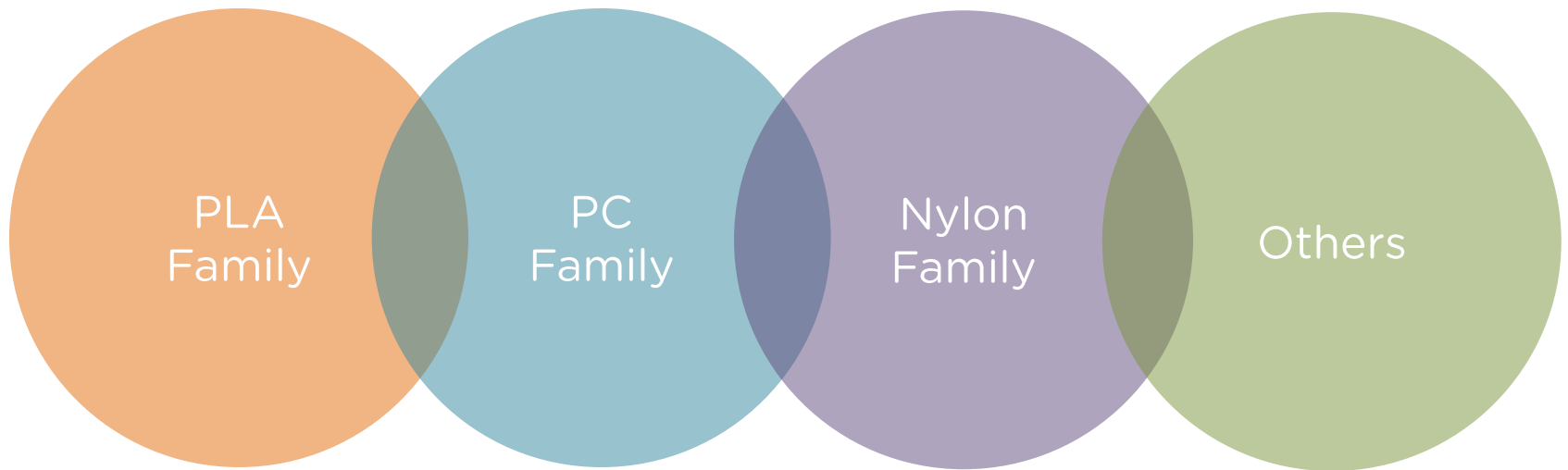
[www.polymaker.com](http://www.polymaker.com)



A ISO9001:2008 certified company



# Material Portfolio



We deliver materials with advanced properties and functions  
that are fully optimized for 3D printing

# PLA Family

Material	Description	Stiffness / Modulus	Strength	Impact Resistance / Toughness	Heat Resistance	Chemical Resistance	Key Features
L1001 (L1001U)	High quality PLA filament with Polymaker's patented Jam-Free™ technology (optional)	High	High	Low	Low (c.a. 60 °C)	Low	<ul style="list-style-type: none"> <li>• Low residual stress, good for large parts</li> <li>• Biodegradable</li> <li>• Economical</li> </ul>
L3001	PLA filament with drastically improved fracture toughness	Medium - High	Medium - High	<b>High</b>	Low (c.a. 60 °C)	Low	<ul style="list-style-type: none"> <li>• High fracture toughness</li> <li>• Superior printing quality</li> </ul>
L3003 (L3003U)	PLA filament with both high fracture toughness and stiffness	High	Medium – High	<b>High</b>	Low (c.a. 60 °C)	Low	<ul style="list-style-type: none"> <li>• Both high fracture toughness and modulus/stiffness</li> </ul>
L7001	PLA-based, 3D printable closed-cell foam	Medium	Medium	Low-Medium	Low (c.a. 60 °C)	Low	<ul style="list-style-type: none"> <li>• The only 3D printable foam</li> <li>• 30-40% lower in density compared to PLA</li> <li>• Unique matte surface finish</li> </ul>
S01	Break-away support material for PLA	Medium	Low – Medium	Medium	/	/	<ul style="list-style-type: none"> <li>• Support material for PLA</li> <li>• Not recommended as a material for parts</li> </ul>



Hilbert cube

L1001 (black) & S01 (white)

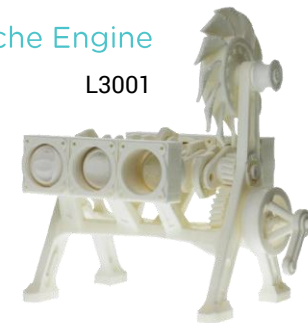


L7001

(Courtesy of Type A Machines)

6-Cylinder  
Porsche Engine

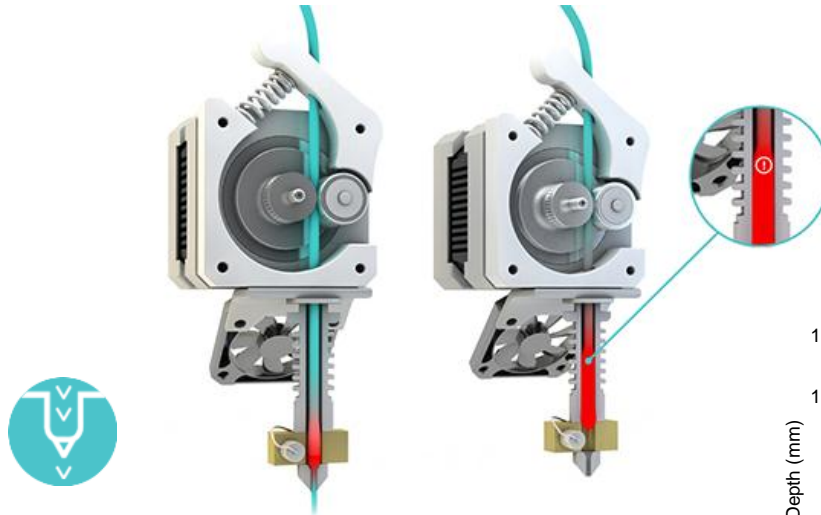
L3001



# Jam-Free™ Technology for PLA

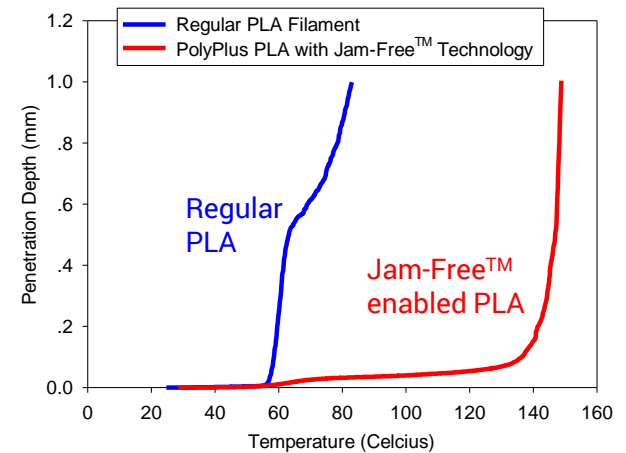
## PLA with Jam-Free™ Technology

- Excellent heat resistance due to its high softening point (> 140 °C)
- A sharp melting profile – liquefies only in the heating zone
- No more extruder jams!
- Particularly useful for
  - Large prints
  - Dual-extruder printing



## Regular PLA filaments

- Tends to soften in the filament barrel (cold end) due to its low softening point (~ 60 °C)
- Leads to inconsistent feeding and even printer jams



\*Currently only available in 1.75 mm filaments

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# PC Family

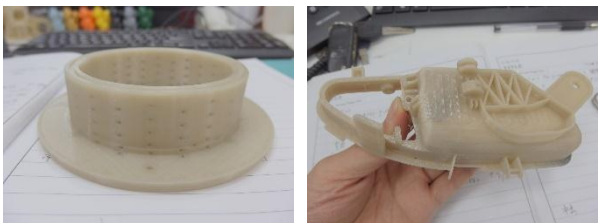
Material	Description	Stiffness / Modulus	Strength	Impact Resistance / Toughness	Heat Resistance	Chemical Resistance	Features
C501	Polycarbonate based filament with good printability. Available in transparent colors.	High	High	Low	High (> 100 °C)	High	<ul style="list-style-type: none"> <li>• A special grade of PC optimized for 3D printing</li> <li>• Good optical clarity</li> </ul>
C515	Polycarbonate based filament with superior printability and mechanical properties, particularly fracture toughness.	High	High	High	High (> 100 °C)	High	<ul style="list-style-type: none"> <li>• Excellent fracture toughness</li> <li>• Dramatically improved layer adhesion</li> </ul>
C515FR	C515 with further improved flame retardance.	High	High	High	High (> 100 °C)	High	<ul style="list-style-type: none"> <li>• Improved flame retardance compared to C515</li> </ul>



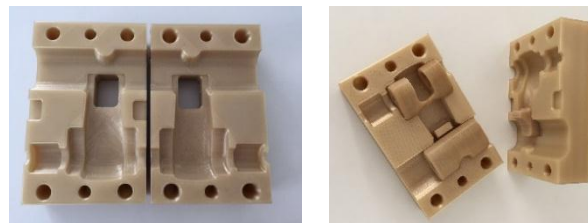

 Made of  
**Makrolon®**  
 The high-tech polycarbonate

# Nylon Family

Material	Description	Stiffness / Modulus	Strength	Impact Resistance / Toughness	Heat Resistance	Chemical Resistance	Features
N703CB	Polyamide copolymer based filament combining excellent heat resistance, mechanical properties and printability	Medium	High	High	Very High (> 150 °C)	Medium – High	<ul style="list-style-type: none"> <li>A compounded Nylon copolymer that offers minimal residue stress and near-zero warping</li> </ul>
N703CB-GL	N703CB reinforced by glass fillers	High	High	High	Very High (> 150 °C)	Medium – High	<ul style="list-style-type: none"> <li>Glass fiber reinforced</li> <li>Further improved heat resistance and dimensional stability</li> </ul>
N712	Polyamide-12 (PA12) based 3D printing filament	Medium	High	High	High	High	<ul style="list-style-type: none"> <li>A compounded PA12 fully optimized for extrusion-based 3D printing; offers minimal residue stress and near-zero warping</li> <li>Less sensitivity to moisture compared to other Nylons</li> </ul>
N712-GL	N712 reinforced by glass fillers	High	High	High	High	High	<ul style="list-style-type: none"> <li>Glass fiber reinforced PA12</li> <li>Further improved heat resistance and dimensional stability</li> </ul>
S02N	Alcohol-soluble support material for Nylon	Medium	Medium-High	High	/	/	<ul style="list-style-type: none"> <li>A soluble support material for Nylon</li> </ul>



Automotive parts  
N703 & N712



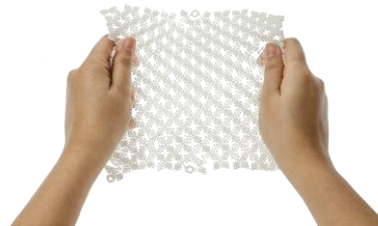
High temperature molds for FRCs  
N703C-GL

# Others

Material	Description	Stiffness / Modulus	Strength	Impact Resistance / Toughness	Heat Resistance	Chemical Resistance	Features
U0295A	TPU filament with Shore A hardness of ~ 95A	Low	Medium - High	Extremely High	/	/	<ul style="list-style-type: none"> <li>Flexible TPU with a hardness of ~ 95 Shore A</li> </ul>
U0168D	TPU filament with Shore D hardness of ~ 68D	Low	Medium - High	Extremely High	/	/	<ul style="list-style-type: none"> <li>Flexible TPU with a hardness of ~ 68 Shore D</li> </ul>
U0175D	TPU filament with Shore D hardness of ~ 75D	Low - Medium	Medium - High	Extremely High	/	/	<ul style="list-style-type: none"> <li>Flexible TPU with a hardness of ~ 75 Shore D</li> </ul>
SP701	PVB-based "polishable" filament	Medium - High	High	Medium - High	Low (c.a. 70 °C)	Low	<ul style="list-style-type: none"> <li>Can be used with Polymaker's Micro-Droplet Polishing™ technology to obtain a layer-free, glossy surface finish</li> </ul>
SP801C	Filament designed specifically for investment casting	Medium	Medium - High	High	Not measured	High	<ul style="list-style-type: none"> <li>Compatible with Polymaker's Micro-Droplet Polishing™ technology</li> <li>Complete and clean burn-out</li> </ul>
ABS01	ABS filament with reduced odor during printing and excellent printability	Medium - High	High	Medium - High	Medium (c.a. 90 °C)	Medium	<ul style="list-style-type: none"> <li>An improved ABS material with better printability and significantly less odor during printing</li> </ul>



**SP701 & Polysher™**  
(purchased separately)



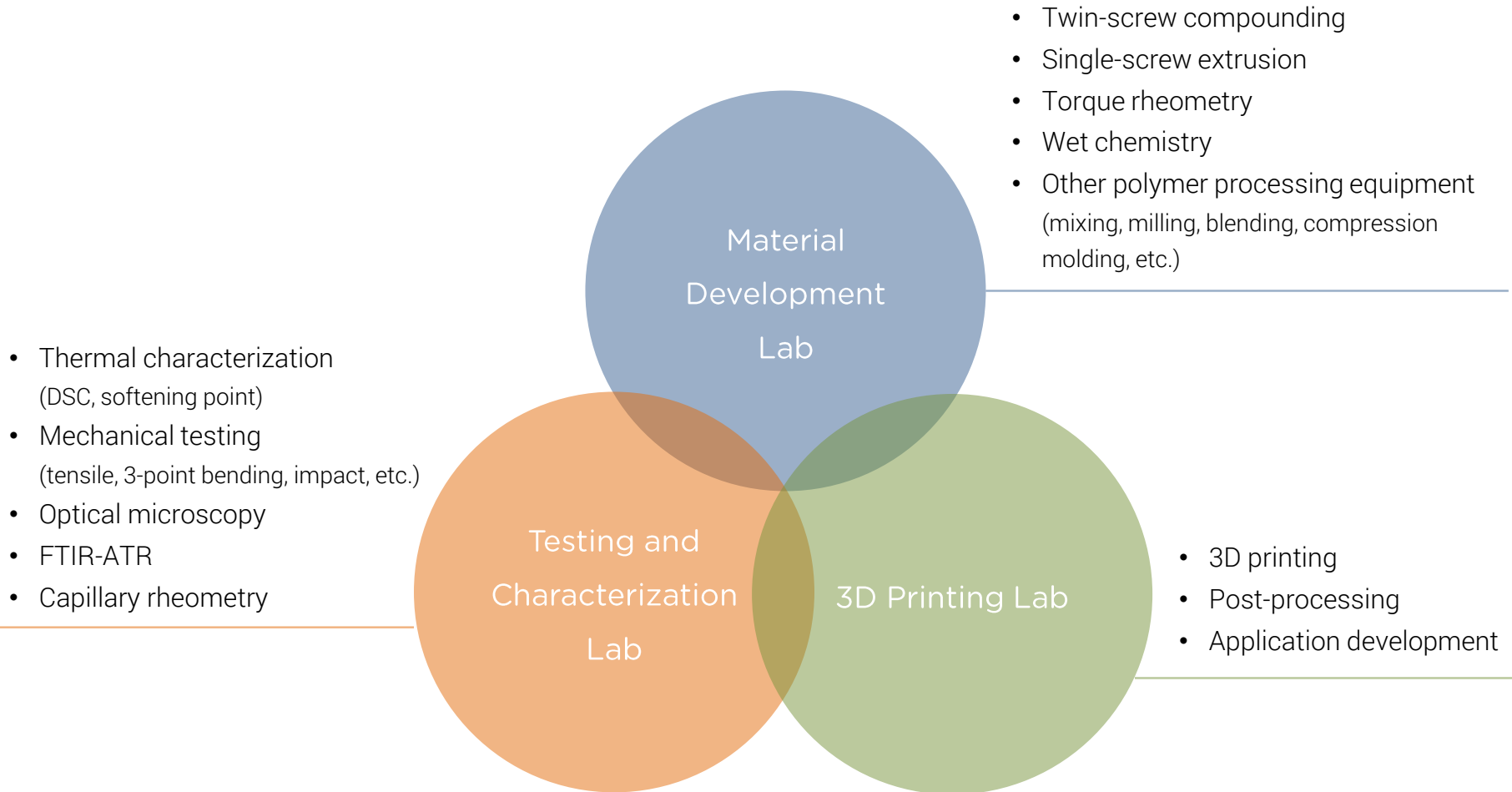
U0295A



SP801C



# R&D Capabilities

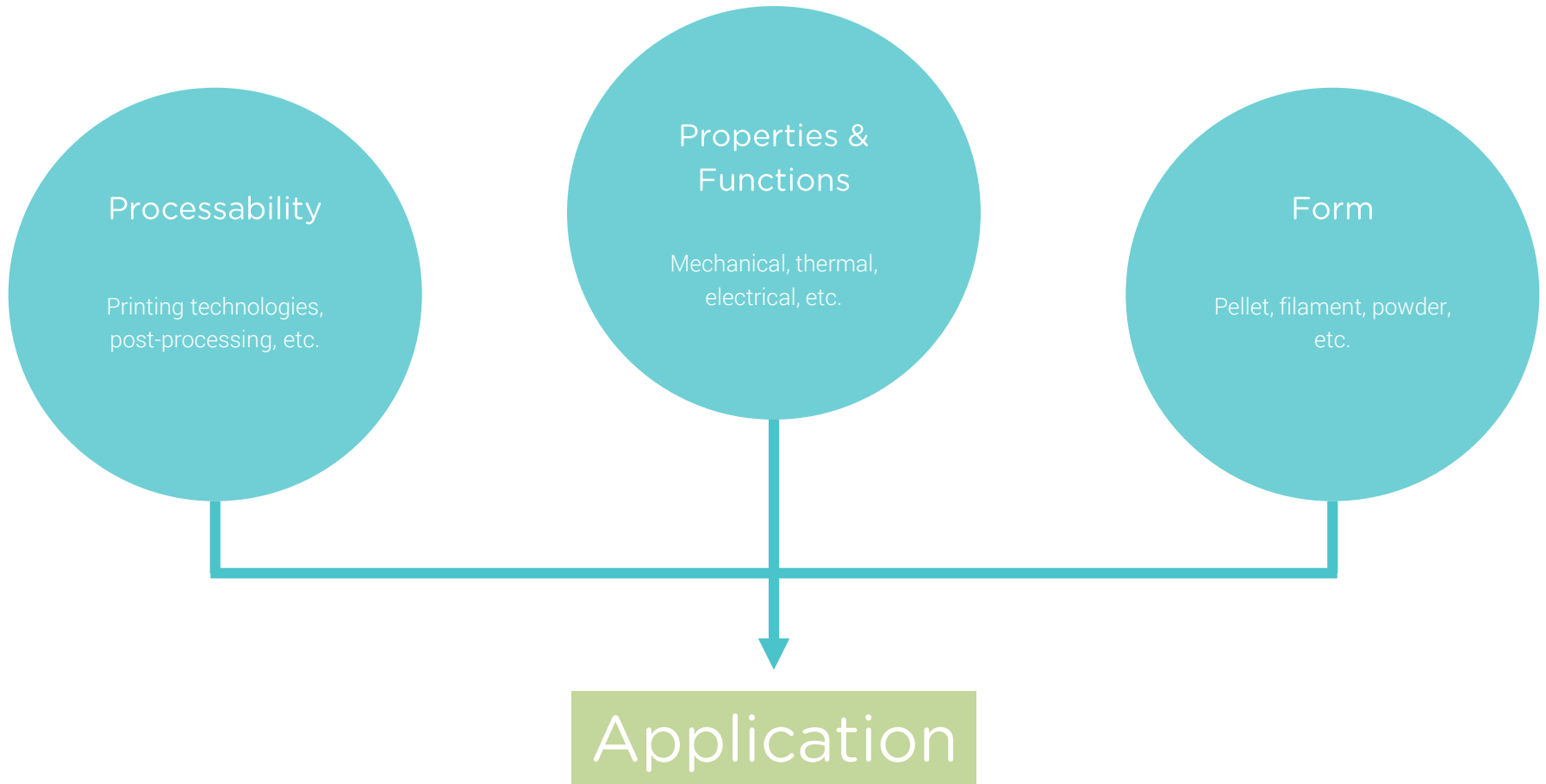


# Manufacturing Capabilities



- 3000 square meter (~ 33,000 square foot) manufacturing facility located at Changshu, China
- State-of-the-art compounding and extrusion equipment
- Flexible system that can take orders from several kg's to hundreds of MT's

# Custom Material Development



Thank you!



Innovation Simplified