



Nylon

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Background

Nylon is a range of materials that are often used for industrial engineering applications.

Its chemical nature allows it to mix with additives that change its behavior for certain applications. This is easily seen with the variety of nylon filaments that exist.

Most nylon filaments share some common features. They are usually resistant to high temperatures and wear.

They also have decent strength characteristics that let it excel in industry.

Nylons vary in their flexibility and their strength depending on the resin and application.

For parts that find themselves in cars, equipment, and industry, nylon gets the job done.

Applications

Nylon, especially the stiffer variety, is perfect when creating mounts for car parts.

Its durability and tolerance to heat make it right at home inside an engine bay.

In industry, nylon is good for gears that need to have high durability and long life cycles.

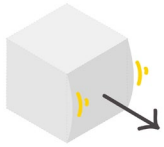
Two surprising areas of application are in shoes and prosthetics. Both application areas require durability and some flexibility.

More flexible nylons are the perfect choice for these applications.

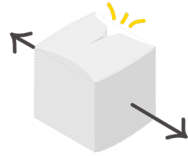
- > Shoe Outsole
- > Gears
- > Car Part Mounts
- > Prosthetics

Material Properties

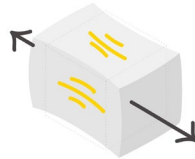
Mechanical



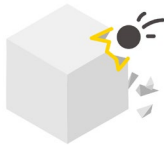
Young's Modulus
2,315-3,138 MPa



UTS
50-65 MPa



Tensile Elongation
3.31-4.00 %



Impact Strength
118 J/m

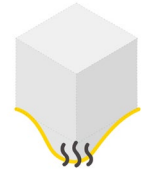


Shrinkage
0.0002 mm/mm

Thermal



Glass Transition
57-60 °C

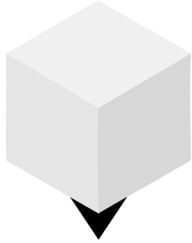


Heat Distortion
80-90 °C

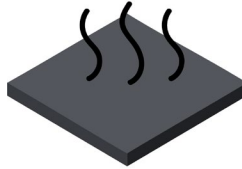


Decomposition
250 °C

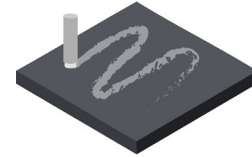
Printer Settings



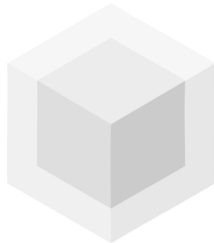
Extruder Temperature
235-250 °C



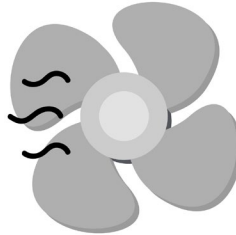
Heated Bed Temperature
60-90 °C



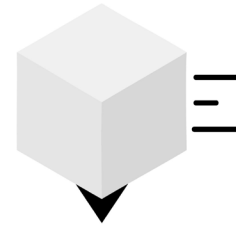
Bed Adhesion
Recommended



Enclosure
Yes



Fans
On



Printing Speed
2,400-3,000 mm/min

Sustainability

Nylon is recyclable, though its feasibility depends on the specific nylon resin.

Nylon is not recycled at commercial recycling centers since it tends to be variable as well.

Efforts to recycle nylon products such as fishing nets into filament have proven successful.

Though recyclable, nylon needs to be considered on a case-by-case basis.

Nylon Validated Suppliers



Black Magic



Taulman 618



Taulman 645



Taulman 910



Taulman Bridge



Taulman PCTPE



CarbonX Nylon
PA+CF



Polymaker
PolyMide™ PA6-GF



Breathe 3DP
NylonUltra



NYLFORCE
Carbon Fiber

Nylon Validated Suppliers



Breathe 3DP
Special K



Breathe 3DP
Kevlar Filled

Questions?

Please, do not hesitate to reach out to **support@re3d.org** via email or visit **re3d.org/support** if you have any more questions about Nylon.

Want to validate your material?

Would you like to see your material listed as a validated supplier? Our engineers welcome your 2.85mm spools! Email **info@re3d.org** for more information.

Sources

- > <https://www.simplify3d.com/support/materials-guide/nylon/>
- > <http://brandsdevelop.com/3d-sneakers/>
- > <https://all3dp.com/2/3d-printed-gears-get-the-gear-that-fits-your-needs/>
- > <https://www.3dhubs.com/knowledge-base/automotive-3d-printing-applications/>
- > <https://www.amputee-coalition.org/3d-printed-prosthetics/>
- > <https://fishyfilaments.com/>