



**A GUIDE TO
NYLON 6,6
ALTERNATIVES**

ARE YOU CONTEMPLATING ALTERNATIVES TO NYLON 6,6, BUT FEELING THE PRESSURE TO DELIVER ON PERFORMANCE? Whether you're working on a new application or considering a material switch, selecting the right material can expand your success. Did you know that with the right formulation, you can achieve properties that are as good or better than that of PA 6,6 using materials such as PA 6, PK, PBT/PET, PP, polymer blends and even post-industrial recycled blends?

Knowing the benefits and drawbacks to such a switch can help you get started down the right path for your specific application needs.



HOW ALTERNATIVE POLYMERS COMPARE TO PA 6,6

PA 6 | POSSIBLE APPLICATIONS:

Automotive, Industrial, Consumer & Sporting Goods

BENEFITS VS. PA 6,6

- Wider processing temperature range
- Better surface quality
- Better weathering resistance
- Shorter conditioning time—nearly half that of PA 6,6

DRAWBACKS VS. PA 6,6

- Lower temperature resistance
- Slightly lower chemical resistance
- Higher water absorption
- Lower stiffness/wear resistance

PK | POSSIBLE APPLICATIONS:

Automotive, Consumer & Sporting Goods, Industrial, Electrical & Electronics

BENEFITS VS. PA 6,6

- Lower CO₂ emissions in production
- Better hydrolysis and chemical resistance
- Comparable dimensional stability
- Inherently lubricious for reduced wear and friction
- Easier to mold
- Cost competitive

DRAWBACKS VS. PA 6,6

- Lower short- and long-term thermal performance
- Harder to color
- More limited process window

PBT/PET | POSSIBLE APPLICATIONS:

Electrical & Electronics

BENEFITS VS. PA 6,6

- Lower water absorption
- Better dimensional stability
- Slightly higher rigidity/stiffness (for PBT)
- Better abrasion resistance
- Slightly better electric resistance

DRAWBACKS VS. PA 6,6

- Lower toughness properties
- Higher density
- Lower short- and long-term temperature resistance
- Lower hydrolysis resistance

PP | POSSIBLE APPLICATIONS:

Automotive, Consumer Goods,
Lightweighting Applications

BENEFITS VS. PA 6,6

- Lower water absorption
- Better dimensional stability
- Slightly better chemical resistance
- Lower density
- Cost effective
- Fiber reinforced PP can achieve similar or better mechanical properties to PA 6,6 GF30

DRAWBACKS VS. PA 6,6

- Reduced rigidity/stiffness
- Much lower abrasion resistance
- Lower electric resistance
- Reduced short- and long-term temperature resistance

PC/PBT & PC/PET BLENDS |

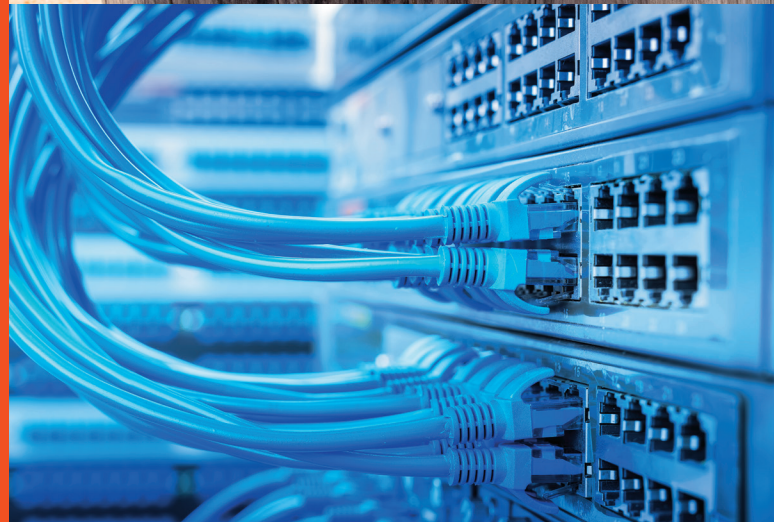
POSSIBLE APPLICATIONS: Automotive Interiors,
Consumer Goods, Household Appliances

BENEFITS VS. PA 6,6

- Higher impact strength
- Good scratch resistance
- Good wear resistance

DRAWBACKS VS. PA 6,6

- Lower mechanical properties
- Higher brittleness
- Narrow processing temperature range



PA 6,6/PET BLENDS |

POSSIBLE APPLICATIONS: Automotive, Industrial, Appliance, Electrical & Electronics, Applications Where Low Water Absorption is Required

BENEFITS VS. PA 6,6

Reduced water absorption—up to 40%
Better dimensional stability
Slightly higher mechanical properties in the conditioned state

DRAWBACKS VS. PA 6,6

Slightly lower temperature resistance
Slightly lower chemical resistance
Narrow processing temperature range

PA/PP BLENDS | POSSIBLE APPLICATIONS:

Automotive Interiors, Electronics, Consumer & Sporting Goods

BENEFITS VS. PA 6,6

Good adhesion to polyolefin-based TPEs
Low permeability of water
Good processability
Lower density

DRAWBACKS VS. PA 6,6

Lower temperature resistance
Lower mechanical properties

POST-INDUSTRIAL RECYCLED SOLUTIONS (PA 6,6/PA 6/PP) |

POSSIBLE APPLICATIONS: Automotive Accessories, Industrial, Consumer & Sporting Goods

BENEFITS VS. PA 6,6

Between 50-80% recycled content
Good processability
Cost effective

DRAWBACKS VS. PA 6,6

Reduced chemical resistance
Wider range of mechanical specifications
Potential for slightly lower mechanical properties



1.844.4AVIENT
www.avient.com



Copyright © 2024, Avient Corporation. Avient makes no representations, guarantees, or warranties of any kind with respect to the information contained in this document about its accuracy, suitability for particular applications, or the results obtained or obtainable using the information. Some of the information arises from laboratory work with small-scale equipment which may not provide a reliable indication of performance or properties obtained or obtainable on larger-scale equipment. Values reported as "typical" or stated without a range do not state minimum or maximum properties; consult your sales representative for property ranges and min/max specifications. Processing conditions can cause material properties to shift from the values stated in the information. Avient makes no warranties or guarantees respecting suitability of either Avient's products or the information for your process or end-use application. You have the responsibility to conduct full-scale end-product performance testing to determine suitability in your application, and you assume all risk and liability arising from your use of the information and/or use or handling of any product. AVIENT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, either with respect to the information or products reflected by the information. This literature shall NOT operate as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner.