

# DuPont™ Zytel® PLUS nylon

## Processability Plus Added Performance to Subtract Weight, Cost in Automotive and Other Consumer Products



Nylon is one of industry's most accommodating materials due to its balance of performance, cost and processing capabilities. DuPont™ Zytel® PLUS has enhanced performance properties which help create durable components and improved flow qualities all while maintaining ease of design and processability.

Zytel® PLUS is capable of working in places that may be too hot, humid or chemically aggressive for traditional nylons. As a result of these enhanced processing capabilities, applications may realize cost and weight savings. Improved processing capabilities means new design ideas and improved functionality for end-use products. As engineers develop lower cost, lower weight and more efficient designs, the capabilities of traditional thermoplastics are extended. While design can overcome many of these challenges, engineers require materials to meet today's demanding needs.

Zytel® PLUS can help meet the challenges of performance, cost and processing.

### Improved Performance Over Time

- Zytel® PLUS with SHIELD Technology has the ability to withstand long-term exposure to heat and chemicals.
- Zytel® PLUS offers the ease of design and processing, while providing high-flow rates for productivity improvements.

### DuPont™ SHIELD Technology

DuPont™ Zytel® Plus with SHIELD Technology combines several innovations, including a new polymer backbone, polymer modifications and a special set of additives, to enhance many performance characteristics.

A combination and composition of innovative chemistries are optimized for each product based on the targeted application.



*The miracles of science™*

## See the Difference

In testing, DuPont™ Zytel® PLUS outperformed traditional nylon products on the market today that were tested.

Zytel® PLUS can help increase the life of thermoplastic components exposed to hot, chemically aggressive and humid environments.

Zytel® PLUS creates the opportunity to replace some specialty polymers, while simplifying processing.

Additional performance data and information can be found at [zytelplus.dupont.com](http://zytelplus.dupont.com).

## Air Oven Aging

The Zytel® PLUS 95G35 core product tested showed no significant drop in its ability to withstand load — even in 4,000 hours exposure to hot air testing — while the ability of the traditional nylon tested to withstand load is cut in half. This resilience makes it attractive for use in cylinder head covers, resonators, exhaust mufflers and oil pans. Zytel® PLUS 95G50 reinforced with 50% glass provides a higher level of stiffness compared to the nylon tested at the upper temperature classes for charge air cooler applications.

## Hot Motor Oil Aging

The Zytel® PLUS 95G35 tested had the ability to resist impact after 3000 hours of exposure to hot oil. When under the same conditions, the performance of the traditional nylon tested dropped to 50%. This makes Zytel® PLUS an attractive material suitable for hot oil applications, oil pans, transmission pans, oil filter modules, rocker covers and other transmission applications.

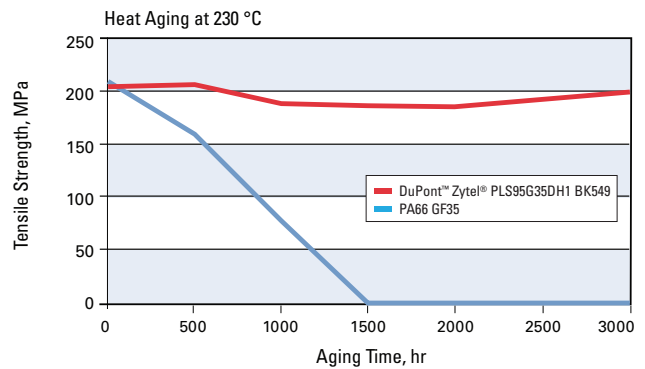
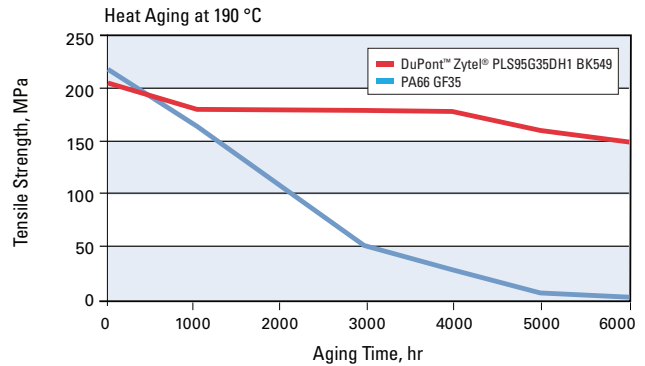
## Superior Hydrolysis Resistance

Zytel® PLUS 90G30 retained key mechanical properties during exposure to hot water or long-life coolant. The performance of the traditional nylon tested dropped 50% when facing the same exposure. Consider Zytel® PLUS for use in radiator end tanks and thermostat housings applications.

## Consider the Possibilities

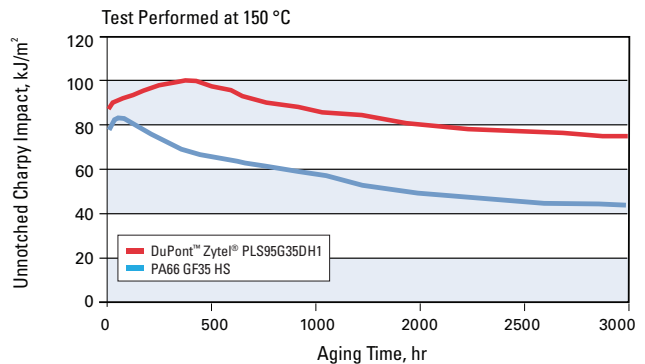
Zytel® PLUS has demonstrated the ability to retain properties after heat aging up to 230 °C. Zytel® PLUS allows longer part service time. Zytel® PLUS is an ideal choice to replace costly metals or specialty polymers to help reduce part cost and lower mass.

### Air Oven Aging<sup>1</sup>



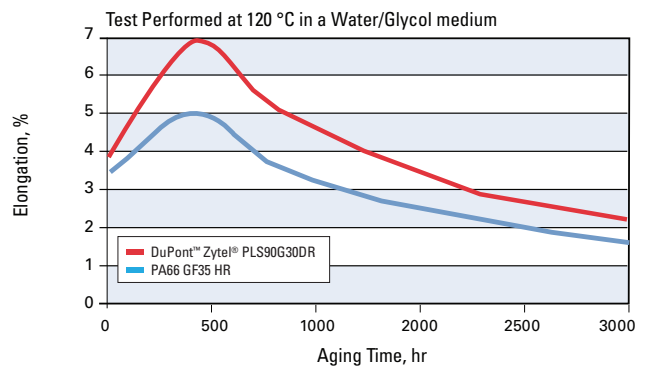
<sup>1</sup>ISO 527-1/-2 test method used by DuPont in 2010

### Hot Motor Oil Aging<sup>2</sup>



<sup>2</sup>ISO 179/1eU test method used by DuPont in 2010

### Superior Hydrolysis Resistance<sup>3</sup>



<sup>3</sup>ISO 527-1/-2 test method used by DuPont in 2010

## DuPont™ Zytel® PLUS nylon

### Consider DuPont™ Zytel® PLUS nylon for applications requiring:

- resistance to chemicals
- resistance to heat and oil aging
- improved appearance
- high-flow and ease of processability



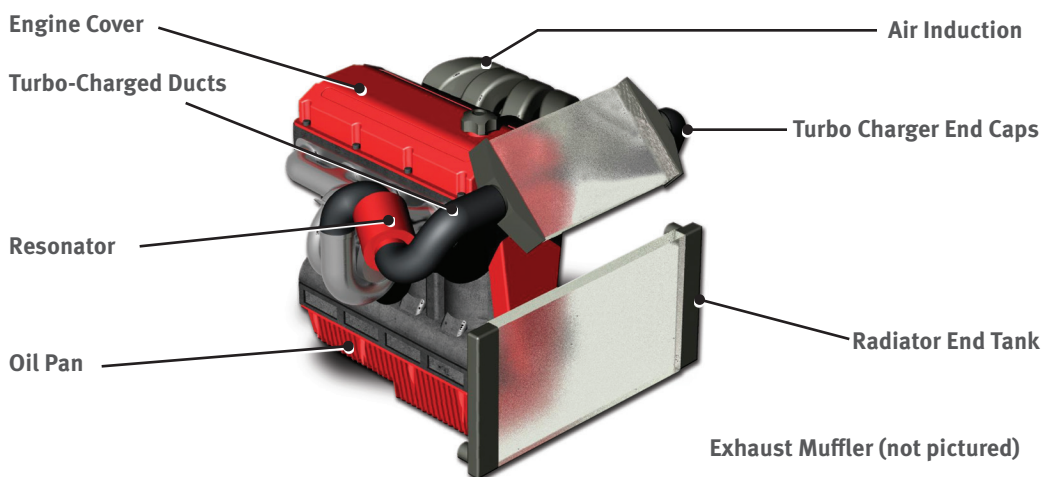
Zytel® PLUS PLS95G35DH1BK549	Zytel® PLUS PLS95G50DH2BK261	Zytel® PLUS PLS93G35DH1BK549	Zytel® PLUS PLS90G30DRBK099
Requisite, core product delivers long-term performance at very high temperatures (up to 210 °C or even 230 °C for shorter periods) plus provides great surface appearance, resistance to calcium chloride solutions	Long-term performance at very high temperatures (up to 210 °C or even 230 °C for shorter periods), plus better stiffness, creep at high temperatures	Long-term performance despite exposure to heat plus improved weld lines and performance in burst tests	Resistance to hot engine coolant plus excellent properties in contact with water

Consider For:					
<b>HOT AIR</b>	Air Intake Manifold	■		■	
	EGR Cooler		■		
	Charge Air Coolers	■	■		
	Exhaust Mufflers	■			
	Turbo Air Ducts	■		■	
	Engine Mounts		■		
	Resonators	■			
<b>HOT OIL</b>	Cylinder Head Cover	■	■		
	Oil Pans	■	■		
	Oil Modules/Filters	■	■		
	Transmission	■	■		
	Front Covers	■	■		
<b>HOT WATER</b>	Radiator End Tanks				■
	Thermostat				■

## DuPont™ Zytel® PLUS nylon

We invite you to put DuPont™ Zytel® PLUS to work in automotive applications, where the drive to subtract weight and cost while adding performance is key to improving fuel economy and efficiencies.

Not working on an automotive application? Challenge us to see how DuPont™ Zytel® PLUS nylon can help turn your concepts into reality without compromise.



**DuPont Performance Polymers specializes in application development, operating globally and using a broad range of high-performance materials and technology to help customers in the global aerospace, appliance, automotive, consumer, electrical, electronic, industrial, sporting goods and other diversified industries deliver high-quality, cost-effective systems and components.**

To find out more, visit [plastics.dupont.com](http://plastics.dupont.com) or contact the nearest DuPont location.

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