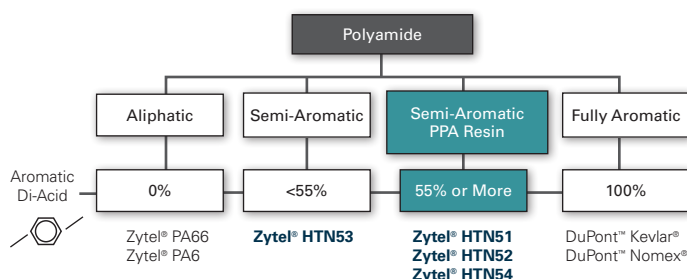


# DuPont™ Zytel® HTN high performance polyamide resin

## PRODUCT REFERENCE GUIDE

DuPont™ Zytel® HTN cost effectively bridges the performance gap between conventional engineering resins and high-end specialty polymers — this is especially important when your component or system has to survive in a hot, cold, chemically aggressive and/or load-bearing environment. Based on aromatic copolymers, Zytel® HTN offers a balance of chemical, moisture and temperature resistance, plus outstanding processability.



### DuPont™ Zytel® HTN Product Portfolio

Category	Zytel® HTN51 (PPA)	Zytel® HTN52 (PPA)	Zytel® HTN54 (PPA)	Zytel® HTN53
Standard Glass Reinforced	51G15HSL 51G35HSL 51G45HSL 51G50HSL	52G35HSL 52G45HSL	54G15HSLR 54G35HSLR 54G50HSLR	53G35HSLR 53G50HSLR 53G50HSLRHF
Hydrolysis Resistant Resins (1=NSF listed)	51G35HSLR¹ 51G45HSLR¹		54G15HSLR 54G35HSLR 54G50HSLR	
Glass/Mineral Reinforced Resins	51GM60THS FE150004 FE150005			53GM40HSL
Low Warp/Mineral Filled Resins	FE16502 FE250020 FE350015			53GM40HSL
Toughened/Unreinforced	FE8200		FE18502	
Flame Retardant	FR51G35L	FR52G20NH FR52G30NH FR52G30NHF FR52G45NHLV		
Low Wear/Low Friction	WRF51G30 WRF51MP20 WRF51K20			
Anti-stat/Conductive	FE350065		FE350064	53CG60HSL
Aesthetic				53G35HSLRHF 53G50HSLRHF 53G50LRHF
FDA Compliant		FG52G35HSL		

#### PRODUCT PORTFOLIO NOTES

Product portfolio is not comprehensive and is subject to change; verify latest and availability of specialty grades with DuPont. Most grades available in BK/NC. Contact DuPont for specific and special color codes.

### DuPont™ Zytel® HTN PPA Grades

- **Zytel® HTN51:** Retains the highest stiffness and strength properties compared with other PPAs despite high temperatures and chemical exposure.
- **Zytel® HTN52:** Molds in water-heated tools, with good retention of mechanical properties when exposed to heat, chemicals and moisture.
- **Zytel® HTN54:** Builds on Zytel® HTN52 with increased toughness and improved retention of mechanical properties with moisture.

### DuPont™ Zytel® HTN Structural Grades (Not PPA)

- **Zytel® HTN53:** Offers improved stiffness and toughness at ambient to moderate temperatures; excellent surface appearance using water-heated tools.

### DuPont™ Zytel® HTN Product Selection

Product portfolio ranked generically by increasing property retention in the specific end-use environment.

	← Increasing property retention			
Temperature	HTN51 (PPA)	HTN52 (PPA)	HTN54 (PPA)	HTN53
Moisture	HTN51 (PPA)	HTN53*	HTN54 (PPA)	HTN52 (PPA)
Chemicals	HTN51 (PPA)	HTN54 (PPA)	HTN52 (PPA)	HTN53
Heat Aging	HTN51 (PPA)	HTN54 (PPA)	HTN52 (PPA)	HTN53

Product portfolio ranked by the typically best performing in the specific application requirement criteria

	← Increasing performance			
Creep	HTN51 (PPA)	HTN52 (PPA)	HTN54 (PPA)	HTN53
Toughness	HTN53	HTN54 (PPA)	HTN51 (PPA)	HTN52 (PPA)
Dimensions (with moisture)	HTN54 (PPA)	HTN53	HTN52 (PPA)	HTN51 (PPA)
Surface Aesthetics	HTN53	HTN51 (PPA)	HTN52 (PPA)	HTN54 (PPA)

#### PRODUCT SELECTION NOTES

\* HTN53 property retention in moist environments dependent on temperature range.

These are general guidelines and product selection is typically dependent upon multiple factors. Please contact your DuPont representative for specific product selection assistance.



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## Performance Advantages — DuPont™ Zytel® versus alternative materials

Choosing DuPont™ Zytel® HTN over other high-performance thermoplastics can result in lower system costs, better performance and/or more freedom of design.

### Versus competitive PPA, Zytel® HTN51 excels with:

- Better property retention in moisture and chemicals
- Better melt stability
- Stronger global support
- Broader range of products

### Versus PPS, Zytel® HTN excels with:

- More toughness to resist break
- Lower material cost (\$/cm<sup>3</sup>)
- Lower processing cost
  - Longer tool life
  - No costly deflashing
- Stronger knit lines

### Versus PA46, Zytel® HTN excels with:

- Better dimensional stability
- Better property retention with moisture
- Improved resistance to automotive fluids
- Improved chemical resistance
- Superior surface appearance

### Versus PEI (polyetherimide), Zytel® HTN excels with:

- Lower material cost (\$/cm<sup>3</sup>)
- Lower processing cost
  - Faster cycle
  - Higher flow, lower clamp requirements
- Design freedom: thinner walls, longer fill path

## DuPont™ Zytel® HTN Molding Basics

Product	Drying Temperature	Drying Time	Moisture Content	Mold Temperature <sup>1</sup>	Melt Temperature <sup>2</sup>	Regrind Usage <sup>3</sup>	Hot Manifolds <sup>4</sup>
HTN51 (PPA)	100°C	6–8 hr	< 0.1%	140–160°C	320–330°C	Up to 25%	OK
HTN52 (PPA)	100°C	6–8 hr	< 0.1%	80–100°C	320–330°C	Up to 25%	OK
HTN53	100°C	6–8 hr	< 0.1%	80–100°C	280–300°C	Up to 25%	OK
HTN54 (PPA)	100°C	6–8 hr	< 0.1%	80–100°C	320–330°C	Up to 25%	OK

#### PRODUCT MOLDING NOTES

The molding information provided is meant to be a general guideline. Please reference the product specific manufacturing recommendations or contact your DuPont representative.

1 = Optimum mold temperatures are based on application requirements. Typically thinner wall parts need higher mold temperatures to maximize physical properties. Unreinforced resins may need lower melt temperatures to improve ejection.

2 = Slightly lower melt temperatures are typically recommended for Flame Retardant resins.

3 = Maximum amounts of allowable regrind are part and application specific. Testing should be completed to verify product performance with any level of regrind.

4 = Proper design and minimal hold-up time are critical to optimum manufacturing capability when utilizing hot manifolds.

The data listed here fall within the normal range of properties, but they should not be used to establish specification limits nor used alone as the basis of design. The DuPont Company assumes no obligations or liability for any advice furnished or for any results obtained with respect to this information. All such advice is given and accepted at the buyer's risk. The disclosure of information herein is not a license to operate under, or a recommendation to infringe, any patent of DuPont or others. Since DuPont cannot anticipate all variations in actual end-use conditions, DuPont makes no warranties and assumes no liability in connection with any use of this information.

**CAUTION:** Do not use DuPont materials in medical applications involving implantation in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical applications and expressly acknowledges the contemplated use.

For further information, please contact your DuPont representative. You may also request a copy of DuPont POLICY Regarding Medical Applications H-50103-2 and DuPont CAUTION Regarding Medical Applications H-50102-2.

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