DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

Product Information

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, DuPont recommends, as the preferred option, incineration with energy recovery (~31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® 70G13HS1L BK031 is a 13% glass fiber reinforced, heat stabilized polyamide 66 resin for injection molding.

General information	Value	Unit	Test Standard
Resin Identification	PA66-GF13	-	ISO 1043
Part Marking Code	PA66-GF13	-	ISO 11469
Rheological properties	**dry / cond**	**Unit**	**Test Standard**
Viscosity number	150[1] / *	cm^3/g	ISO 307, 1157, 1628
Molding shrinkage, parallel	0.5 / -	%	ISO 294-4, 2577
Molding shrinkage, normal	1.0 / -	%	ISO 294-4, 2577
1: Sulfuric acid 96%			
Mechanical properties	**dry / cond**	**Unit**	**Test Standard**
Tensile Modulus	5500 / 3500	MPa	ISO 527-1/-2
Stress at break	120 / 75	MPa	ISO 527-1/-2
Strain at break	2.7 / 12	%	ISO 527-1/-2
Flexural Modulus	4900 / 2900	MPa	ISO 178
Flexural Strength	190 / 100	MPa	ISO 178
Charpy notched impact strength			ISO 179/1eA
73°F	5 / 6	kJ/m^2	
-40°F	4.5 / 4	kJ/m^2	
Izod notched impact strength			ISO 180/1A
73°F	4.5 / 6	kJ/m^2	
-40°F	4.5 / 4	kJ/m^2	
Thermal properties	**dry / cond**	**Unit**	**Test Standard**
Melting temperature, 18°F/min	262 / *	°C	ISO 11357-1/-3
Temp. of deflection under load			ISO 75-1/-2
260 psi	238 / *	°C	
65 psi	258 / *	°C	
Coeff. of linear therm. expansion, parallel	40 / *	E-6/K	ISO 11359-1/-2
Coeff. of linear therm. expansion			ISO 11359-1/-2
normal	93 / *	E-6/K	
Normal, -40-23°C	77 / *	E-6/K	
Normal, 55-160°C	149 / *	E-6/K	
Parallel, -40-23°C	42 / *	E-6/K	
Parallel, 55-160°C	26 / *	E-6/K	
RTI, electrical			UL 746B
30mil	140 / *	°C	
60mil	140 / *	°C	
120mil	140	°C	
RTI, impact			UL 746B
30mil	125	°C	
60mil	125 / *	°C	
120mil	125	°C	

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**
DONGGUAN FUMEI PLASTICS CO.,LTD. TEL: +86 0769-82339888 / 87798999
EMAIL: fumei@foomx.com

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

RTI, strength			UL 746B
30mil	140	°C	
60mil	140 / *	°C	
120mil	140	°C	
Flammability	**dry / cond**	**Unit**	**Test Standard**
Burning Behav. at 60mil nom. thickn.	HB / *	class	IEC 60695-11-10
Thickness tested	1.5 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
Burning Behav. at thickness h	HB / *	class	IEC 60695-11-10
Thickness tested	0.71 / *	mm	IEC 60695-11-10
UL recognition	yes / *	-	UL 94
FMVSS Class	B	-	ISO 3795 (FMVSS 302)
Burning rate, Thickness 1 mm	26	mm/min	ISO 3795 (FMVSS 302)
Other properties	**dry / cond**	**Unit**	**Test Standard**
Density	1230 / -	kg/m³	ISO 1183
VDA Properties	**Value**	**Unit**	**Test Standard**
Emission of organic compounds	6	µgC/g	VDA 277
Injection	**dry / cond**	**Unit**	**Test Standard**
Drying Recommended	yes	-	-
Drying Temperature	≥80	°C	-
Drying Time, Dehumidified Dryer	2 - 4	h	-
Processing Moisture Content	≤0.2	%	-
Melt Temperature Optimum	295	°C	-
Min. melt temperature	285	°C	-
Max. melt temperature	305	°C	-
Max. screw tangential speed	0.2 / *	m/s	-
Mold Temperature Optimum	100	°C	-
Min. mold temperature	70	°C	-
Max. mold temperature	120	°C	-
Hold pressure range	50 - 100	MPa	-
Hold pressure time	3	s/mm	-
Ejection temperature	210	°C	-

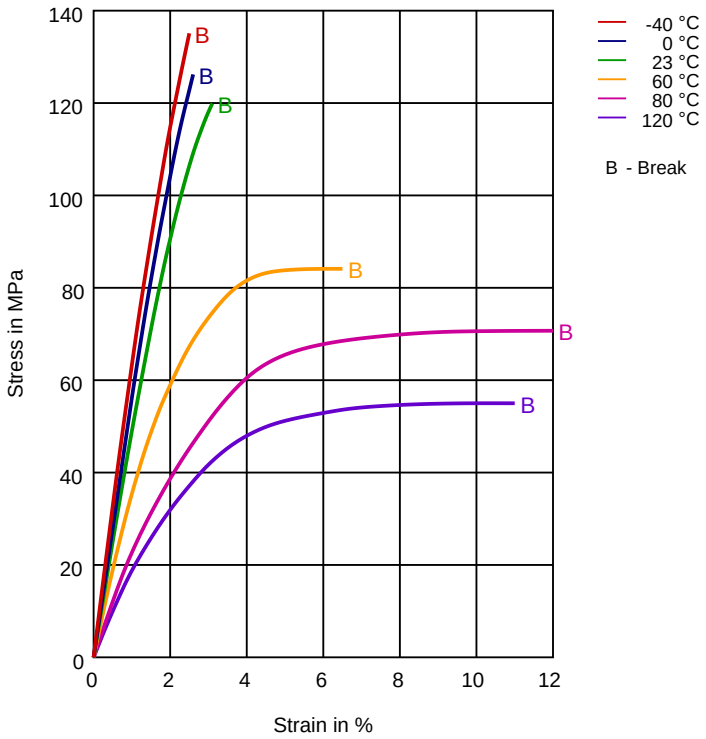
Characteristics			
Processing	• Injection Molding		
Special characteristics	• Heat stabilized or stable to heat		
Regional Availability	• North America • Europe	• Asia Pacific • South and Central America	• Near East/Africa • Global

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

Diagrams

Stress-strain (dry)(measured on Zytel® 70G13L NC010)



To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**

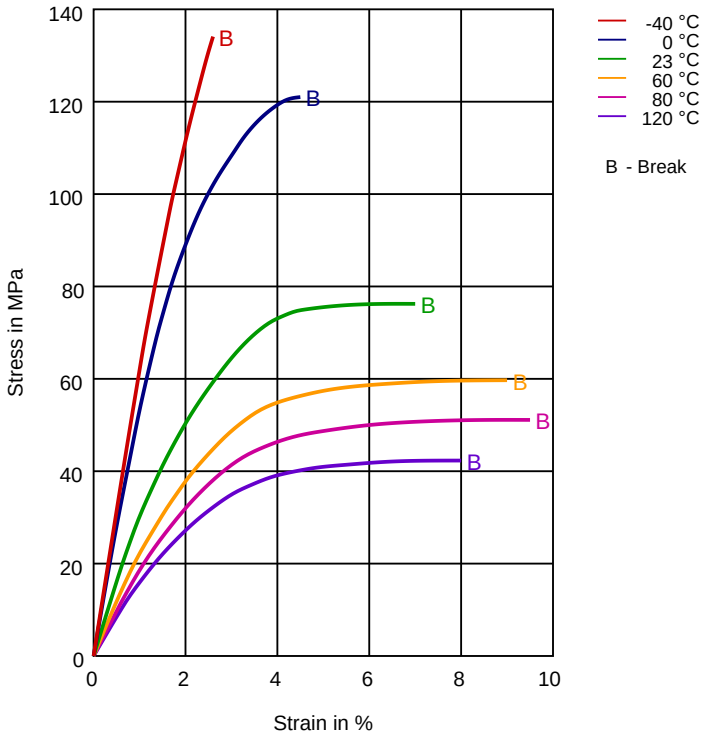
DONGGUAN FUMEI PLASTICS CO.,LTD. TEL: +86 0769-82339888 / 87798999

EMAIL: fumei@foomx.com

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

Stress-strain (cond.)(measured on Zytel® 70G13L NC010)



To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**

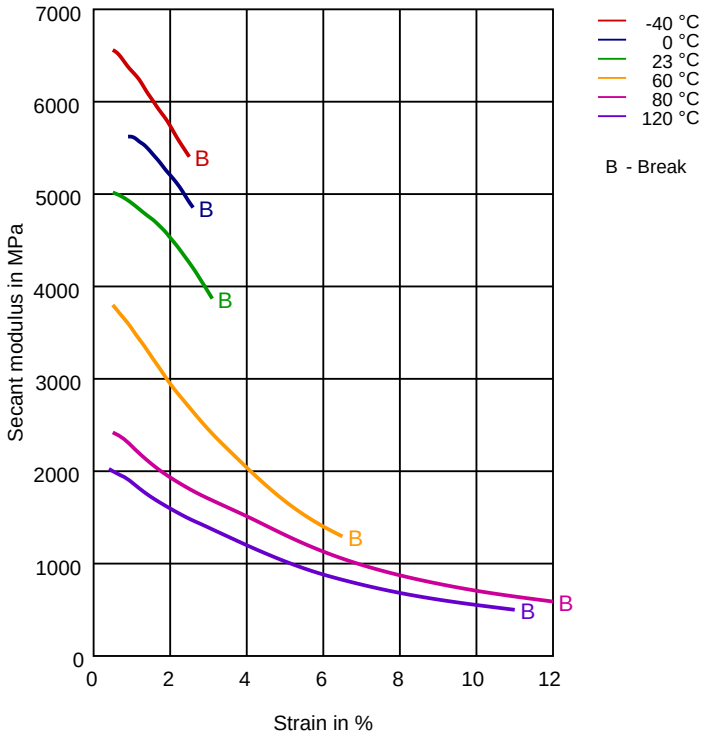
DONGGUAN FUMEI PLASTICS CO.,LTD. TEL: +86 0769-82339888 / 87798999

EMAIL: fumei@foomx.com

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

Secant modulus-strain (dry)(measured on Zytel® 70G13L NC010)



To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**

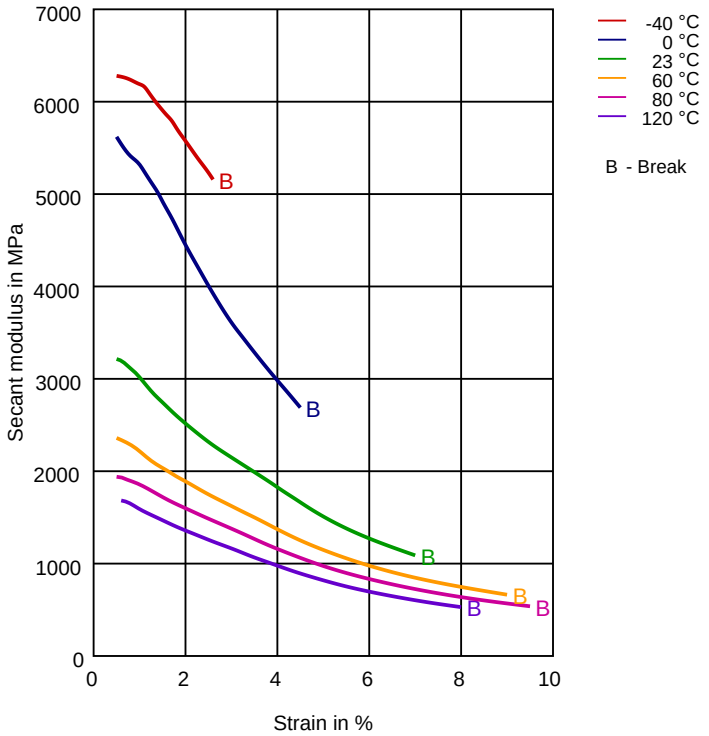
DONGGUAN FUMEI PLASTICS CO.,LTD. TEL: +86 0769-82339888 / 87798999

EMAIL: fumei@foomx.com

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

Secant modulus-strain (cond.)(measured on Zytel® 70G13L NC010)



To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**

DONGGUAN FUMEI PLASTICS CO.,LTD. TEL: +86 0769-82339888 / 87798999

EMAIL: fumei@foomx.com

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

Chemical Media Resistance

Acids

- ✓ Acetic Acid (5% by mass) (23°C)
- ✓ Citric Acid solution (10% by mass) (23°C)
- ✓ Lactic Acid (10% by mass) (23°C)
- ✗ Hydrochloric Acid (36% by mass) (23°C)
- ✗ Nitric Acid (40% by mass) (23°C)
- ✗ Sulfuric Acid (38% by mass) (23°C)
- ✗ Sulfuric Acid (5% by mass) (23°C)
- ✗ Chromic Acid solution (40% by mass) (23°C)

Bases

- ✗ Sodium Hydroxide solution (35% by mass) (23°C)
- ✓ Sodium Hydroxide solution (1% by mass) (23°C)
- ✓ Ammonium Hydroxide solution (10% by mass) (23°C)

Alcohols

- ✓ Isopropyl alcohol (23°C)
- ✓ Methanol (23°C)
- ✓ Ethanol (23°C)

Hydrocarbons

- ✓ n-Hexane (23°C)
- ✓ Toluene (23°C)
- ✓ iso-Octane (23°C)

Ketones

- ✓ Acetone (23°C)

Ethers

- ✓ Diethyl ether (23°C)

Mineral oils

- ✓ SAE 10W40 multigrade motor oil (23°C)
- ✓ SAE 10W40 multigrade motor oil (130°C)
- ✓ SAE 80/90 hypoid-gear oil (130°C)
- ✓ Insulating Oil (23°C)

Standard Fuels

- ✓ ISO 1817 Liquid 1 - E5 (60°C)
- ✓ ISO 1817 Liquid 2 - M15E4 (60°C)
- ✓ ISO 1817 Liquid 3 - M3E7 (60°C)
- ✓ ISO 1817 Liquid 4 - M15 (60°C)
- ✓ Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- ✓ Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)

DuPont™ Zytel® 70G13HS1L BK031

NYLON RESIN

✓	Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
✓	Diesel fuel (pref. ISO 1817 Liquid F) (90°C)
✓	Diesel fuel (pref. ISO 1817 Liquid F) (>90°C)

Salt solutions

✓	Sodium Chloride solution (10% by mass) (23°C)
✗	Sodium Hypochlorite solution (10% by mass) (23°C)
✓	Sodium Carbonate solution (20% by mass) (23°C)
✓	Sodium Carbonate solution (2% by mass) (23°C)
✗	Zinc Chloride solution (50% by mass) (23°C)

Other

✓	Ethyl Acetate (23°C)
✗	Hydrogen peroxide (23°C)
✓	DOT No. 4 Brake fluid (130°C)
✓	Ethylene Glycol (50% by mass) in water (108°C)
✓	1% nonylphenoxy-polyethyleneoxy ethanol in water (23°C)
✓	50% Oleic acid + 50% Olive Oil (23°C)
✓	Water (23°C)
✓	Water (90°C)
✗	Phenol solution (5% by mass) (23°C)

Symbols used:

✓ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✗ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc. ISO Mechanical properties measured at 160 mil (Hytrel® measured at 80 mil), IEC Electrical properties measured at 80 mil, all ASTM properties measured at 120 mil, and test temperatures are 73°F unless otherwise stated.

To find out more, visit DuPont Performance Polymers or contact nearest DuPont location.

North America **Asia Pacific** **Europe/Middle East/Africa**
DONGGUAN FUMEI PLASTICS CO.,LTD. TEL: +86 0769-82339888 / 87798999
EMAIL: fumei@foomx.com