# HiFill® PA6 GF33 IM3 BK

### Polyamide 6

## **Techmer Engineered Solutions**

#### Message:

HiFill® PA6 GF33 IM3 BK is a polyamide 6 (nylon 6) product, which contains a 33% glass fiber reinforced material. It can be processed by injection molding and is available in North America.

Features include:

Lubrication

flame retardant/rated flame Impact modification Impact resistance heat stabilizer

Impact modifier   heat stabilizer   Lubricant	General Information				
heat stabilizer Lubricant  Impact resistance, high Thermal Stability Lubrication  Appearance Black Forms Particle Processing Method Injection molding Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792 Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955 Water Absorption (24 hr) 0.97 % ASTM D955 Water Absorption (24 hr) 0.97 % ASTM D708 Mechanical Nominal Value Unit Test Method Test Method  ASTM D708 Mechanical Nominal Value Unit Test Method  Test Method  ASTM D785 Mechanical Nominal Value Unit Test Method  Test Method  Test Method  Test Method  ASTM D785 Mechanical Nominal Value Unit Test Method  MPa ASTM D790  Impact Nominal Value Unit Test Method  ASTM D256  40°C, 3.18 mm 100 1/m ASTM D256	Filler / Reinforcement	Glass fiber reinforced material, 33% filler by weight			
Features Impact resistance, high Thermal Stability Lubrication  Appearance Black Forms Particle Processing Method Injection molding Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792 Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D795 Water Absorption (24 hr) 0.97 % ASTM D570 Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 Unit Test Method Rockwell Hardness (R-Scale) 120 ASTM D785 Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Tensile Elongation (Break) 140 MPa ASTM D790 Impact Nominal Value Unit Test Method	Additive	Impact modifier			
Features Impact resistance, high Thermal Stability Lubrication  Appearance Black Forms Particle Processing Method Injection molding  Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792 Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955 Water Absorption (24 hr) 0.97 % ASTM D570 Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 Unit Test Method Rockwell Hardness (R-Scale) 120 Water Absorption (Break) 132 MPa ASTM D785 Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Tensile Strength (Break) 186 MPa ASTM D638 Tensile Strength Modulus 7450 MPa ASTM D638 Tensile Strength Unit Test Method Marchanical Nominal Value Unit Test Method Marchanical Modulus 7450 MPa ASTM D638 Tensile Strength Unit Test Method Marchanical Nominal Value Unit Test Method Marchani		heat stabilizer			
Thermal Stability Lubrication  Appearance Black Forms Particle Processing Method Injection molding  Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792  Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955  Water Absorption (24 hr) 0.97 % ASTM D570  Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 Unit Test Method Rockwell Hardness (R-Scale) 120 ASTM D785  Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638  Tensile Elongation (Break) 4.0 % ASTM D638  Flexural Modulus 7450 MPa ASTM D790  Flexural Strength (Break) 186 MPa ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D256  -40°C, 3.18 mm 100 J/m ASTM D256  23°C, 3.18 mm 250 J/m ASTM D256		Lubricant			
Thermal Stability Lubrication  Appearance Black Forms Particle Processing Method Injection molding  Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792  Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955  Water Absorption (24 hr) 0.97 % ASTM D570  Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 Unit Test Method Rockwell Hardness (R-Scale) 120 ASTM D785  Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638  Tensile Elongation (Break) 4.0 % ASTM D638  Flexural Modulus 7450 MPa ASTM D790  Flexural Strength (Break) 186 MPa ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D256  -40°C, 3.18 mm 100 J/m ASTM D256  23°C, 3.18 mm 250 J/m ASTM D256					
Lubrication  Appearance Black Forms Particle Processing Method Injection molding  Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792  Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955  Water Absorption (24 hr) 0.97 % ASTM D570  Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 Unit Test Method Rockwell Hardness (R-Scale) 120 When ASTM D785  Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638  Tensile Elengation (Break) 4.0 % ASTM D638  Flexural Modulus 7450 MPa ASTM D638  Flexural Strength (Break) 186 MPa ASTM D790  Impact Nominal Value Unit Test Method  Notiched Izod Impact ASTM D256  -40°C, 3.18 mm 100 J/m ASTM D256  23°C, 3.18 mm 250 J/m ASTM D256	Features	Impact resistance, high			
Appearance Black Forms Particle Processing Method Injection molding Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792 Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955 Water Absorption (24 hr) 0.97 % ASTM D570 Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 Unit Test Method Rockwell Hardness (R-Scale) 120 White Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Flexural Modulus 7450 MPa ASTM D638 Flexural Modulus 7450 MPa ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact ASTM D256 -40°C, 3.18 mm 100 J/m ASTM D256 23°C, 3.18 mm 250 J/m ASTM D256		Thermal Stability			
Processing Method Injection molding  Physical Nominal Value Unit Test Method  Specific Gravity 1.32 g/cm³ ASTM D792  Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955  Water Absorption (24 hr) 0.97 % ASTM D570  Hardness Nominal Value Unit Test Method  Rockwell Hardness (R-Scale) 120 ASTM D785  Mechanical Nominal Value Unit Test Method  Tensile Strength (Break) 132 MPa ASTM D638  Tensile Elongation (Break) 4.0 % ASTM D638  Flexural Modulus 7450 MPa ASTM D790  Flexural Strength 186 MPa ASTM D790  Flexural Strength 186 MPa ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D256  -40°C, 3.18 mm 100 J/m ASTM D256		Lubrication			
Processing Method Injection molding  Physical Nominal Value Unit Test Method  Specific Gravity 1.32 g/cm³ ASTM D792  Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955  Water Absorption (24 hr) 0.97 % ASTM D570  Hardness Nominal Value Unit Test Method  Rockwell Hardness (R-Scale) 120 ASTM D785  Mechanical Nominal Value Unit Test Method  Tensile Strength (Break) 132 MPa ASTM D638  Tensile Elongation (Break) 4.0 % ASTM D638  Flexural Modulus 7450 MPa ASTM D790  Flexural Strength 186 MPa ASTM D790  Flexural Strength 186 MPa ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D790  Impact Nominal Value Unit Test Method  Notched Izod Impact ASTM D256  -40°C, 3.18 mm 100 J/m ASTM D256					
Processing Method Injection molding Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792 Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955 Water Absorption (24 hr) 0.97 % ASTM D570 Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 ASTM D785 Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Flexural Modulus 7450 MPa ASTM D638 Flexural Strength 186 MPa ASTM D790 Impact Nominal Value Unit Test Method Notiched Izod Impact Unit Test Method Notiched Izod Impact Unit Test Method Notiched Izod Impact ASTM D790 Impact Nominal Value Unit Test Method Notiched Izod Impact ASTM D256 -40°C, 3.18 mm 100 J/m ASTM D256	Appearance	Black			
Physical Nominal Value Unit Test Method Specific Gravity 1.32 g/cm³ ASTM D792 Molding Shrinkage - Flow (3.18 mm) 0.30 % ASTM D955 Water Absorption (24 hr) 0.97 % ASTM D570 Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 ASTM D785 Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D790 Flexural Modulus 7450 MPa ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact Unit Test Method Notched Izod Impact ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact ASTM D256 -40°C, 3.18 mm 100 J/m ASTM D256	Forms	Particle			
Specific Gravity   1.32   g/cm³   ASTM D792	Processing Method	Injection molding			
Molding Shrinkage - Flow (3.18 mm)         0.30         %         ASTM D955           Water Absorption (24 hr)         0.97         %         ASTM D570           Hardness         Nominal Value         Unit         Test Method           Rockwell Hardness (R-Scale)         120         ASTM D785           Mechanical         Nominal Value         Unit         Test Method           Tensile Strength (Break)         132         MPa         ASTM D638           Tensile Elongation (Break)         4.0         %         ASTM D638           Flexural Modulus         7450         MPa         ASTM D790           Flexural Strength         186         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Notched Izod Impact         ASTM D256         ASTM D256           -40°C, 3.18 mm         100         J/m         ASTM D256           23°C, 3.18 mm         250         J/m         ASTM D256	Physical	Nominal Value	Unit	Test Method	
Water Absorption (24 hr)  O.97  Water Absorption (24 hr)  O.97  Water Absorption (24 hr)  Nominal Value  Unit  Test Method  ASTM D785  Mechanical  Nominal Value  Unit  Test Method  Tensile Strength (Break)  132  MPa  ASTM D638  Tensile Elongation (Break)  4.0  WPa  ASTM D638  Flexural Modulus  7450  MPa  ASTM D790  Flexural Strength  186  MPa  ASTM D790  Impact  Nominal Value  Unit  Test Method  ASTM D790  Impact  Nominal Value  Unit  Test Method  ASTM D790  Impact  Nominal Value  Unit  Test Method  ASTM D256  -40°C, 3.18 mm  100  J/m  ASTM D256	Specific Gravity	1.32	g/cm³	ASTM D792	
Hardness Nominal Value Unit Test Method Rockwell Hardness (R-Scale) 120 ASTM D785 Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Flexural Modulus 7450 MPa ASTM D790 Flexural Strength 186 MPa ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact ASTM D790 ASTM D790 ASTM D790 ASTM D790 ASTM D256 -40°C, 3.18 mm 100 J/m ASTM D256	Molding Shrinkage - Flow (3.18 mm)	0.30	%	ASTM D955	
Rockwell Hardness (R-Scale)         120         ASTM D785           Mechanical         Nominal Value         Unit         Test Method           Tensile Strength (Break)         132         MPa         ASTM D638           Tensile Elongation (Break)         4.0         %         ASTM D638           Flexural Modulus         7450         MPa         ASTM D790           Flexural Strength         186         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Notched Izod Impact         ASTM D256           -40°C, 3.18 mm         100         J/m         ASTM D256           23°C, 3.18 mm         250         J/m         ASTM D256	Water Absorption (24 hr)	0.97	%	ASTM D570	
Mechanical Nominal Value Unit Test Method Tensile Strength (Break) 132 MPa ASTM D638 Tensile Elongation (Break) 4.0 % ASTM D638 Flexural Modulus 7450 MPa ASTM D790 Flexural Strength 186 MPa ASTM D790 Impact Nominal Value Unit Test Method Notched Izod Impact ASTM D256 -40°C, 3.18 mm 100 J/m ASTM D256	Hardness	Nominal Value	Unit	Test Method	
Tensile Strength (Break)  Tensile Elongation (Break)  4.0  MPa  ASTM D638  ASTM D638  Flexural Modulus  7450  MPa  ASTM D790  Flexural Strength  186  MPa  ASTM D790  Impact  Nominal Value  Unit  Test Method  ASTM D256  -40°C, 3.18 mm  100  J/m  ASTM D256  23°C, 3.18 mm  250  J/m  ASTM D256	Rockwell Hardness (R-Scale)	120		ASTM D785	
Tensile Elongation (Break)       4.0       %       ASTM D638         Flexural Modulus       7450       MPa       ASTM D790         Flexural Strength       186       MPa       ASTM D790         Impact       Nominal Value       Unit       Test Method         Notched Izod Impact       ASTM D256         -40°C, 3.18 mm       100       J/m       ASTM D256         23°C, 3.18 mm       250       J/m       ASTM D256	Mechanical	Nominal Value	Unit	Test Method	
Flexural Modulus         7450         MPa         ASTM D790           Flexural Strength         186         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Notched Izod Impact         ASTM D256           -40°C, 3.18 mm         100         J/m         ASTM D256           23°C, 3.18 mm         250         J/m         ASTM D256	Tensile Strength (Break)	132	МРа	ASTM D638	
Flexural Strength         186         MPa         ASTM D790           Impact         Nominal Value         Unit         Test Method           Notched Izod Impact         ASTM D256           -40°C, 3.18 mm         100         J/m         ASTM D256           23°C, 3.18 mm         250         J/m         ASTM D256	Tensile Elongation (Break)	4.0	%	ASTM D638	
Impact         Nominal Value         Unit         Test Method           Notched Izod Impact         ASTM D256           -40°C, 3.18 mm         100         J/m         ASTM D256           23°C, 3.18 mm         250         J/m         ASTM D256	Flexural Modulus	7450	MPa	ASTM D790	
Notched Izod Impact ASTM D256 -40°C, 3.18 mm 100 J/m ASTM D256 23°C, 3.18 mm 250 J/m ASTM D256	Flexural Strength	186	МРа	ASTM D790	
-40°C, 3.18 mm 100 J/m ASTM D256 23°C, 3.18 mm 250 J/m ASTM D256	Impact	Nominal Value	Unit	Test Method	
23°C, 3.18 mm 250 J/m ASTM D256	Notched Izod Impact			ASTM D256	
	-40°C, 3.18 mm	100	J/m	ASTM D256	
Unnotched Izod Impact (3.18 mm) 1400 J/m ASTM D256	23°C, 3.18 mm	250	J/m	ASTM D256	
	Unnotched Izod Impact (3.18 mm)	1400	J/m	ASTM D256	

Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (1.8			
MPa, Unannealed)	210	°C	ASTM D648
CLTE - Flow	3.6E-5	cm/cm/°C	ASTM D696
Electrical	Nominal Value	Unit	Test Method
Volume Resistivity	2.0E+13	ohms·cm	ASTM D257
Dielectric Strength <sup>1</sup>	15	kV/mm	ASTM D149
Flammability	Nominal Value	Unit	Test Method
Flame Rating	НВ		UL 94
Injection	Nominal Value	Unit	
Drying Temperature	82.2	°C	
Drying Time	2.0 - 4.0	hr	
Suggested Max Moisture	0.10	%	
Rear Temperature	266 - 277	°C	
Middle Temperature	277 - 288	°C	
Front Temperature	271 - 282	°C	
Nozzle Temperature	271 - 282	°C	
Processing (Melt) Temp	277 - 288	°C	
Mold Temperature	79.4 - 104	°C	
Injection Rate	Slow-Moderate		
Back Pressure	0.00 - 0.345	MPa	
Injection instructions			

Screw Speed: MediumRecommendations for Molding and Tool Conditions: Well vented moldMoisture Content, as received: Product is packaged at 0.2% or less.

#### NOTE

1.

Method A (short time)

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