

Product Comparison

Technical Data

Product Description

Starflam® X-Protect
RF0067K
(Dry)

Starflam X-Protect RF0067K is a 30% glass fiber reinforced, flame retardant PA66 for injection molded applications. The material is halogen free and red phosphorus free.

Generic
Nylon 66 - Glass Fiber

This data represents typical values that have been calculated from all products classified as: Generic Nylon 66 - Glass Fiber

This information is provided for comparative purposes only.

General	Starflam® X-Protect RF0067K (Dry)	Generic Nylon 66 - Glass Fiber
Manufacturer / Supplier	<ul style="list-style-type: none"> Ascend Performance Materials Operations LLC 	<ul style="list-style-type: none"> Generic
Generic Symbol	<ul style="list-style-type: none"> Nylon 66 	<ul style="list-style-type: none"> Nylon 66
Material Status	<ul style="list-style-type: none"> Commercial: Active 	<ul style="list-style-type: none"> Commercial: Active
UL Yellow Card ¹	<ul style="list-style-type: none"> E70062-104537182 E70062-104537185 	--
Search for UL Yellow Card	<ul style="list-style-type: none"> Ascend Performance Materials Operations LLC 	--
Availability	<ul style="list-style-type: none"> Europe North America 	<ul style="list-style-type: none"> Africa & Middle East Asia Pacific Europe Latin America North America
Filler / Reinforcement	<ul style="list-style-type: none"> Glass Fiber, 30% Filler by Weight 	<ul style="list-style-type: none"> Glass Fiber
Additive	<ul style="list-style-type: none"> Flame Retardant Heat Stabilizer Mold Release 	--
Features	<ul style="list-style-type: none"> Flame Retardant Halogen Free Heat Stabilized 	--
Appearance	<ul style="list-style-type: none"> Natural Color 	--
Forms	<ul style="list-style-type: none"> Pellets 	--
Processing Method	<ul style="list-style-type: none"> Injection Molding 	--
Resin ID	<ul style="list-style-type: none"> PA66-(X+GF)30 FR 	--



General	Starflam® X-Protect RF0067K (Dry)	Generic Nylon 66 - Glass Fiber
Also Available In	--	<ul style="list-style-type: none"> • Asia Pacific • Europe • Latin America • North America

Physical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Density / Specific Gravity					
--	--	--	1.18 to 1.58	g/cm ³	ASTM D792
--	1.48	--	1.19 to 1.58	g/cm ³	ISO 1183
--	--	--	1360	kg/m ³	ISO 1183 ³
Apparent (Bulk) Density	--	--	0.70 to 0.71	g/cm ³	ISO 60
Melt Mass-Flow Rate (MFR)					
275°C/2.16 kg	--	--	6.0 to 31	g/10 min	ASTM D1238
275°C/0.325 kg	--	--	1.0 to 3.1	g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (275°C/5.0 kg)	--	--	10 to 51	cm ³ /10min	ISO 1133
Spiral Flow	--	--	7.30 to 52.0	cm	
Molding Shrinkage					
Flow	--	--	0.10 to 6.4	%	ASTM D955
Across Flow	--	--	0.35 to 2.0	%	ASTM D955
--	--	--	3.0E-3 to 1.2	%	ISO 294-4
Across Flow : 23°C, 2.00 mm	1.0	--	--	%	ISO 294-4
Flow : 23°C, 2.00 mm	0.30	--	--	%	ISO 294-4



Physical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Water Absorption					
24 hr	--	--	0.23 to 1.0	%	ASTM D570
24 hr, 23°C	0.90	--	0.23 to 1.1	%	ISO 62
Saturation	--	--	0.010 to 6.1	%	ASTM D570
Saturation, 23°C	--	--	3.9 to 7.1	%	ISO 62
Saturation	--	--	5.5	%	ISO 62 ³
Equilibrium	--	--	0.79 to 2.2	%	ASTM D570
Equilibrium, 23°C, 50% RH	1.1	--	0.93 to 2.2	%	ISO 62
Equilibrium	--	--	1.6	%	ISO 62 ³
K-Value	--	--	75.9 to 76.1		ISO 1628-2
Viscosity Number (Reduced Viscosity)	--	--	143.8 to 150.0	ml/g	ISO 1628
Viscosity Number					
--	--	--	128 to 151	cm ³ /g	ISO 307
--	--	--	143	cm ³ /g	ISO 307, 1157, 1628 ³
Heat Stability	--	--	105 to 148	°C	

Mechanical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Tensile Modulus					
--	--	--	4270 to 14200	MPa	ASTM D638
--	--	--	4720 to 11700	MPa	ISO 527-1
23°C	10500	7900	--	MPa	ISO 527-1
--	--	--	8160	MPa	ISO 527-2 ³



Mechanical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Tensile Strength					
Yield	--	--	81.0 to 205	MPa	ASTM D638
Yield	--	--	72.8 to 234	MPa	ISO 527-2
Break	--	--	79.2 to 221	MPa	ASTM D638
Break	--	--	69.5 to 246	MPa	ISO 527-2
Break, 23°C	135	94.0	--	MPa	ISO 527-2
Break	--	--	160	MPa	ISO 527-2 ³
Ultimate	--	--	116 to 200	MPa	ASTM D638
--	--	--	82.1 to 231	MPa	ASTM D638
--	--	--	52.0 to 274	MPa	ISO 527-2
Tensile Elongation					
Yield	--	--	1.9 to 3.6	%	ASTM D638
Yield	--	--	1.8 to 3.6	%	ISO 527-2
Break	--	--	1.0 to 700	%	ASTM D638
Break	--	--	2.0 to 3.6	%	ISO 527-2
Break, 23°C	2.1	3.0	--	%	ISO 527-2
Break	--	--	2.5 to 3.1	%	ISO 527-2 ³
Flexural Modulus					
--	--	--	3610 to 11800	MPa	ASTM D790
--	--	--	4030 to 11500	MPa	ISO 178
23°C	10300	7500	--	MPa	ISO 178
Flexural Strength					
--	--	--	112 to 307	MPa	ASTM D790
--	--	--	122 to 383	MPa	ISO 178
23°C	191	138	--	MPa	ISO 178
Yield	--	--	134 to 338	MPa	ASTM D790
Break	--	--	110 to 342	MPa	ASTM D790
Compressive Strength					
--	--	--	20.0 to 276	MPa	ASTM D695
--	--	--	43.0 to 265	MPa	ISO 604



Mechanical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Shear Strength	--	--	68.5 to 105	MPa	ASTM D732
Poisson's Ratio	--	--	0.34 to 0.40		ASTM E132
Coefficient of Friction	--	--	0.18 to 0.59		ASTM D1894
Wear Factor	--	--	0.0 to 150	10 ⁻⁸ mm ³ /N·m	ASTM D3702
Impact	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Charpy Notched Impact Strength					
--	--	--	5.7 to 15	kJ/m ²	ISO 179
-40°C	10	12	--	kJ/m ²	ISO 179/1eA
-30°C	10	12	--	kJ/m ²	ISO 179/1eA
23°C	11	12	--	kJ/m ²	ISO 179/1eA
-30°C	--	--	6.60	kJ/m ²	ISO 179/1eA ³
23°C	--	--	7.89	kJ/m ²	ISO 179/1eA ³
Charpy Unnotched Impact Strength					
--	--	--	29 to 100	kJ/m ²	ISO 179
-40°C	53	51	--	kJ/m ²	ISO 179/1eU
-30°C	53	51	--	kJ/m ²	ISO 179/1eU
23°C	55	61	--	kJ/m ²	ISO 179/1eU
-30°C	--	--	60.0	kJ/m ²	ISO 179/1eU ³
23°C	--	--	65.5	kJ/m ²	ISO 179/1eU ³
Notched Izod Impact					
--	--	--	36 to 170	J/m	ASTM D256
--	--	--	2.2 to 16	kJ/m ²	ISO 180
-40°C	8.5	10	--	kJ/m ²	ISO 180/1A
-30°C	8.7	10	--	kJ/m ²	ISO 180/1A
23°C	9.6	11	--	kJ/m ²	ISO 180/1A
Notched Izod Impact (Area)					
--	--	--	5.63 to 18.2	kJ/m ²	ASTM D256
Unnotched Izod Impact					
--	--	--	340 to 1600	J/m	ASTM D4812
--	--	--	30 to 91	kJ/m ²	ISO 180



Impact	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Instrumented Dart Impact					
--	--	--	5.00 to 12.5	J	ASTM D3763
--	--	--	0.700 to 4.22	J	ISO 6603-2
Multi-Axial Instrumented Impact Peak Force	--	--	580 to 1110	N	ISO 6603-2
Tensile Impact Strength	--	--	11.3 to 33.3	kJ/m ²	ASTM D1822
Hardness	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Rockwell Hardness					
--	--	--	114 to 125		ASTM D785
--	--	--	95 to 122		ISO 2039-2
Shore Hardness	--	--	78 to 81		ISO 868
Ball Indentation Hardness	--	--	178 to 330	MPa	ISO 2039-1
Thermal	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Deflection Temperature Under Load					
0.45 MPa, Unannealed	--	--	249 to 261	°C	ASTM D648
0.45 MPa, Unannealed	247	243	247 to 264	°C	ISO 75-2/B
0.45 MPa	--	--	250	°C	ISO 75-2 ³
1.8 MPa, Unannealed	--	--	219 to 259	°C	ASTM D648
1.8 MPa, Unannealed	218	191	227 to 259	°C	ISO 75-2/A
1.8 MPa, Annealed	--	--	235 to 255	°C	ASTM D648
1.8 MPa	--	--	250	°C	ISO 75-2 ³
8.0 MPa, Unannealed	--	--	70.0 to 236	°C	ISO 75-2/C
Continuous Use Temperature	--	--	86.9 to 183	°C	ASTM D794
Glass Transition Temperature	--	--	5.00 to 80.0	°C	ISO 11357-2
Vicat Softening Temperature					
--	--	--	229 to 261	°C	ASTM D1525
--	--	--	225 to 255	°C	ISO 306



Thermal	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Melting Temperature					
--	--	--	253 to 266	°C	
--	--	--	260 to 265	°C	DSC
--	258	--	260 to 264	°C	ISO 11357-3
--	--	--	253 to 260	°C	ASTM D3418
--	--	--	259 to 261	°C	ISO 3146
CLTE					
Flow	--	--	1.7E-5 to 7.9E-5	cm/cm/°C	ASTM D696
Flow	--	--	9.1E-6 to 4.3E-5	cm/cm/°C	ASTM E831
Flow	--	--	1.2E-5 to 4.2E-5	cm/cm/°C	ISO 11359-2
Transverse	--	--	1.0E-6 to 9.8E-5	cm/cm/°C	ASTM D696
Transverse	--	--	3.8E-5 to 7.9E-5	cm/cm/°C	ASTM E831
Transverse	--	--	5.7E-5 to 1.2E-4	cm/cm/°C	ISO 11359-2
Specific Heat					
--	--	--	1240 to 2000	J/kg/°C	ASTM C351
Thermal Conductivity					
--	--	--	0.19 to 0.57	W/m/K	ASTM C177
--	--	--	0.20 to 0.40	W/m/K	ISO 8302
RTI Elec					
--	--	--	65.0 to 142	°C	UL 746B
0.8 mm	140	--	--	°C	
1.6 mm	140	--	--	°C	
3.0 mm	140	--	--	°C	
RTI Imp					
--	--	--	65.0 to 131	°C	UL 746B
0.8 mm	110	--	--	°C	
1.6 mm	110	--	--	°C	
3.0 mm	110	--	--	°C	



Thermal	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
RTI Str					UL 746B
--	--	--	65.0 to 142	°C	
0.8 mm	140	--	--	°C	
1.6 mm	140	--	--	°C	
3.0 mm	140	--	--	°C	
Electrical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Surface Resistivity					
--	--	--	10 to 2.5E+15	ohms	ASTM D257
--	--	--	20 to 2.5E+15	ohms	IEC 60093
--	--	--	1.0E+2 to 6.0E+15	ohms	IEC 62631-3-2
Volume Resistivity					
--	--	--	1.0E+2 to 2.5E+16	ohms·cm	ASTM D257
--	--	--	10 to 7.5E+15	ohms·cm	IEC 60093
--	--	--	1.0E+9 to 1.3E+15	ohms·m	IEC 62631-3-1
Dielectric Strength					
--	--	--	16 to 25	kV/mm	ASTM D149
--	--	--	18 to 48	kV/mm	IEC 60243-1
1.00 mm	34	32	--	kV/mm	IEC 60243-1
Dielectric Constant					
--	--	--	2.91 to 4.09		ASTM D150
--	--	--	3.47 to 4.11		IEC 60250
--	--	--	3.69		IEC 60250
--	--	--	3.75		IEC 62631-2-1
Dissipation Factor					
--	--	--	0.010 to 0.021		ASTM D150
--	--	--	6.8E-3 to 0.021		IEC 60250
--	--	--	9.0E-3 to 0.017		IEC 62631-2-1
1 MHz	--	--	0.018		IEC 60250 ³
Arc Resistance	--	--	63.5 to 130	sec	ASTM D495



Electrical	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Comparative Tracking Index (CTI)	--	--	540 to 600	V	UL 746A
Comparative Tracking Index					
--	--	--	400 to 600	V	IEC 60112
3.00 mm	575	--	--	V	IEC 60112
--	--	--	500		IEC 60112 ³
High Amp Arc Ignition (HAI)					UL 746A
0.8 mm	PLC 0	--	--		
1.6 mm	PLC 0	--	--		
3.0 mm	PLC 0	--	--		
Hot-wire Ignition (HWI)					UL 746A
0.8 mm	PLC 0	--	--		
1.6 mm	PLC 0	--	--		
3.0 mm	PLC 0	--	--		
Flammability	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Burning Rate	--	--	0.0 to 100	mm/min	ISO 3795
Flame Rating					UL 94
0.8 mm	V-0	--	--		
1.6 mm	V-0	--	--		
3.0 mm	V-0	--	--		
Glow Wire Flammability Index					IEC 60695-2-12
--	--	--	649 to 960	°C	
0.8 mm	960	--	--	°C	
1.6 mm	960	--	--	°C	
3.0 mm	960	--	--	°C	
Glow Wire Ignition Temperature					IEC 60695-2-13
--	--	--	650 to 961	°C	
0.8 mm	800	--	--	°C	
1.6 mm	800	--	--	°C	
3.0 mm	825	--	--	°C	



Flammability	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Oxygen Index	--	--	25 to 34	%	ASTM D2863
--	--	--	23 to 27	%	ISO 4589-2
-- ⁴	44	--	--	%	ISO 4589-2
Smoke Density ⁴	150	--	--	Ds	ISO 5659-2
Smoke Toxicity ⁴	0.58	--	--	CIT NLP	NF X 70-100-1/2
Fill Analysis	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	
Melt Density	--	--	1.12 to 1.28	g/cm ³	
Ejection Temperature	--	--	210	°C	
Additional Information	Starflam® X-Protect RF0067K (Dry)	(Conditioned)	Generic Nylon 66 - Glass Fiber	Unit	Test Method
Railway Classification ⁴					EN 45545-2
R22	HL3	--	--		
R23	HL3	--	--		
Injection	Starflam® X-Protect RF0067K (Dry)		Generic Nylon 66 - Glass Fiber	Unit	
Drying Temperature	80		78 to 82	°C	
Drying Time	4.0		2.8 to 5.3	hr	
Drying Time, Maximum	--		8.0	hr	
Dew Point	--		-18	°C	
Suggested Max Moisture	--		2.0E-3 to 0.63	%	
Suggested Shot Size	--		50	%	
Suggested Max Regrind	--		25	%	
Hopper Temperature	--		70 to 75	°C	
Rear Temperature	260 to 280		264 to 289	°C	
Middle Temperature	280 to 290		268 to 295	°C	
Front Temperature	260 to 280		269 to 300	°C	



Injection	Starflam® X-Protect RF0067K (Dry)	Generic Nylon 66 - Glass Fiber	Unit
Nozzle Temperature	--	269 to 303	°C
Processing (Melt) Temp	270 to 290	267 to 297	°C
Melt Temperature (Optimum)	--	280	°C
Mold Temperature	40 to 90	70 to 103	°C
Injection Pressure	--	6.89 to 99.2	MPa
Holding Pressure	--	59.3 to 75.0	MPa
Back Pressure	--	0.147 to 1.77	MPa
Screw Speed	--	38 to 83	rpm
Cushion	--	4.66 to 9.53	mm
Vent Depth	--	0.019 to 0.057	mm

Injection Notes

Generic
Nylon 66 - Glass Fiber

This data represents typical values that have been calculated from all products classified as: Generic Nylon 66 - Glass Fiber

This information is provided for comparative purposes only.

Notes

¹ A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

² Typical properties: these are not to be construed as specifications.

³ Tested in accordance with ISO 10350. 23°C/50%r.h. unless otherwise noted.

⁴ Railway Application

