

# TECHNYL® PROTECT

Flame retardants

## TECHNICAL DATA SHEET

### TECHNYL PROTECT A 60G1 V30 BK 15N

(Previously TECHNYL A 60G1 V30 BLACK 15N)

TECHNYL PROTECT A 60G1 V30 BK 15N is a polyamide 66 based on a non-halogenated flame retardant system, reinforced with 30% of glass fiber, heat stabilized, for injection moulding. This grade offers excellent flame retardancy properties (UL 94, 5VA, GWIT) combined with excellent processing, mechanical and electrical performance. It can withstand temperatures of 160°C for over 6000 hours and has a UL F1 rating for weatherability resistance.

#### General

Feature	Halogen and red phosphorus free flame retardant		
Polymer type	PA66 (Polyamide 66)		
Processing technology	Injection molding		
Certification	RoHS EC 1907/2006 (REACH)	UL-Yellow Card European Railways Certifications EN 45545-2	
Applications	Electrical/Electronic Applications		
Colors available	Black Grey	Natural	
Forms	Pellets		

#### Product identification

ISO 1043 abbreviation	PA66-GF30 FR(40)		
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	Condition	Standard	Unit	Value
<b>Physical properties</b>				
Density		ISO 1183	g/cm <sup>3</sup>	1.46
Water absorption	24 hr, 23°C	ISO 62	%	0.73
Water absorption, saturation			%	4.3

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	Condition	Standard	Unit	Value dam / cond.*
<b>Mechanical properties</b>				
Tensile modulus	1 mm/min	ISO 527-1/-2	MPa	10200 / 8410
Stress at break		ISO 527-1/-2	MPa	145 / 110
Strain at break		ISO 527-1/-2	%	2.3 / 4
Flexural modulus, ISO 178	2 mm/min	ISO 178	MPa	10000 / 7900
Flexural modulus, ASTM D790	2 mm/min	ASTM D790	MPa	10000 / 7900
Flexural strength, ISO 178	2 mm/min	ISO 178	MPa	250 / 180
Flexural strength, ASTM D790	2 mm/min	ASTM D790	MPa	220 / 180
Charpy impact strength, +23°C	+23°C	ISO 179/1eU	kJ/m²	55 / 60
Charpy impact strength, -30°C	-30°C	ISO 179/1eU	kJ/m²	55 / -
Charpy notched impact strength, +23°C	+23°C	ISO 179/1eA	kJ/m²	8 / 11
Charpy notched impact strength, -30°C	-30°C	ISO 179/1eA	kJ/m²	8 / -

### Thermal properties

Melting temperature, 10°C/min		ISO 11357-1	°C	263
Temp. of deflection under load, 1.80 MPa	1.80 MPa	ISO 75	°C	245

### Electrical properties

Volume resistivity		IEC 62631-3-1	ohm.m	6E+012
Surface resistivity		IEC 62631-3-1	ohm	2E+015
Comparative tracking index	Solution A	IEC 60112	V	600
CTI performance level category		Sol A		PLC 0
Dielectric strength	1 mm	IEC 60243-1	kV/mm	38

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	Condition	Standard	Unit	Value
<b>Burning behaviour</b>				
UL Yellow Card availability 		Click here to have access to the UL Yellow Card → <a href="#">QMFZ2.E44716</a>		
Flammability, 0.75 mm	0.75 mm	UL 94		V0
Flammability, 1.5 mm	1.5 mm	UL 94		5VA
Flammability, 3.0 mm	3.0 mm	UL 94		5VA
Glow-wire flammability index, GWFI, 0.75 mm	0.75 mm	IEC 60695-2-12	°C	960
Glow-wire flammability index, GWFI, 1.5 mm	1.5 mm	IEC 60695-2-12	°C	960
Glow-wire flammability index, GWFI, 3.0 mm	3.0 mm	IEC 60695-2-12	°C	960
Glow-wire ignition temperature, GWIT, 0.75 mm	0.75 mm	IEC 60695-2-13	°C	775
Oxygen index			%	33

\*: conditioned according to ISO 1110

### Processing conditions

Drying temperature/time	80 °C
Suggested max moisture	0.2 %
Rear temperature	265 - 275 °C
Middle temperature	265 - 275 °C
Front temperature	270 - 280 °C
Recommended mould temperature	60 - 90 °C

### Injection notes

The material is supplied in airtight bags, ready for use. In case that the virgin material has absorbed moisture, it must be dried with a dehumidified air drying equipment, dew point minimum -20°C. Recommended time 2-4h.

### Injection advice

All reinforced, flame retardant compounds generate some level of abrasion/corrosion to the steel processing equipment. These issues may be magnified by using incorrect processing conditions (temperatures, residence time, moisture level ...) during the moulding process. Therefore, Domo recommends you adhere to the processing conditions detailed in this technical data sheet. For equipment that comes into contact with molten flame retardant compounds, Domo advises you to use a steel with high chromium and high carbon content (having a minimum concentration of 16% chromium) to prevent corrosion and abrasion. For the correct reference of steel associated to flame retardant compounds' processing, please refer to your equipment manufacturers. In the case of high requirements on surface quality a mould temperature of up to 120°C can be considered. The processing parameters like processing temperatures are a recommendation and can be adjusted in function of injection machine size, part geometry / design.

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#### Disclaimer

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