

FRIANYL® B3 W GF30 V0E - PA6
Description

Polyamide 6 compound, 30% glass fiber reinforced, heat resistant, based on flame retardants halogen and red phosphorous free. UL classified V0@1.5mm.

Designed for Electrical applications requiring self-extinguishing properties combined with good mechanical performances, this grade meets the most stringent safety requirements for insulating materials. Good surface quality. Ideal for thick walled parts.

Preliminary Data Sheet

Physical properties	Value	Unit	Test Standard
Density	87.4	lb/ft ³	ISO 1183
Molding shrinkage, parallel (flow)	0.2 - 0.5	%	ISO 294-4, 2577
Molding shrinkage, transverse normal	0.5 - 0.8	%	ISO 294-4, 2577
Water absorption, 23°C-sat	5.2	%	Sim. to ISO 62
Humidity absorption, 23°C/50%RH	1.5	%	ISO 62
Mechanical properties	Value	Unit	Test Standard
Tensile modulus	1.52E6/913739	psi	ISO 527-1, -2
Tensile stress at break, 5mm/min	21800/14500	psi	ISO 527-1, -2
Tensile strain at break, 5mm/min	3/6	%	ISO 527-1, -2
Flexural modulus, 23°C	1.58E6/-	psi	ISO 178
Flexural strength, 23°C	34100/-	psi	ISO 178
Charpy impact strength, 23°C	33.3/38.1	ft-lb/in ²	ISO 179/1eU
Charpy impact strength, -30°C	28.5/-	ft-lb/in ²	ISO 179/1eU
Charpy notched impact strength, 23°C	5.71/9.04	ft-lb/in ²	ISO 179/1eA
Charpy notched impact strength, -30°C	4.99/-	ft-lb/in ²	ISO 179/1eA
Ball indentation hardness, 30s	30500	psi	ISO 2039-1
Thermal properties	Value	Unit	Test Standard
Melting temperature, 20°C/min	437	°F	ISO 11357-1/-3
DTUL at 1.8 MPa	401	°F	ISO 75-1, -2
DTUL at 0.45 MPa	428	°F	ISO 75-1, -2
Coeff. of linear therm expansion, parallel	0.122	E-4/°F	ISO 11359-2
Start Temp	30	°C	ISO 11359-2
End Temp	70	°C	ISO 11359-2
Coeff. of linear therm expansion, normal	0.711	E-4/°F	ISO 11359-2
Start Temp	30	°C	ISO 11359-2
End Temp	70	°C	ISO 11359-2
FMVSS	SE	-	ISO 3795
FMVSS thickness	0.0394	in	(FMVSS 302) ISO 3795 (FMVSS 302)
Flammability @3.2mm nom. thickn.	V-0	class	UL 94
Flammability @1.6mm nom. thickn.	V-0	class	UL 94
CLTE below Tg, parallel	0.139	E-4/°F	ISO 11359-2
Start Temp	-22	°F	ISO 11359-2
End Temp	86	°F	ISO 11359-2
CLTE above Tg, parallel	0.106	E-4/°F	ISO 11359-2
Start Temp	158	°F	ISO 11359-2
End Temp	320	°F	ISO 11359-2
CLTE below Tg, normal	0.439	E-4/°F	ISO 11359-2
Start Temp	-22	°F	ISO 11359-2
End Temp	86	°F	ISO 11359-2
CLTE above Tg, normal	0.744	E-4/°F	ISO 11359-2
Start Temp	158	°F	ISO 11359-2
End Temp	320	°F	ISO 11359-2
Continuous service temperature	120	°C	DIN/IEC 60216-1
Glow wire flammability index, 0.8 mm	1760	°F	IEC 60695-2-12
Glow wire flammability index, 3.2 mm	1760	°F	IEC 60695-2-12

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Thermal conductivity, flow	0.5	W/(m K)	ISO 22007-4
Thermal conductivity, crossflow	0.46	W/(m K)	ISO 22007-4
Thermal conductivity, thruplane	0.46	W/(m K)	ISO 22007-4
Thermal diffusivity, flow	0.24	mm ² /s	ISO 22007-4
Thermal diffusivity, crossflow	0.22	mm ² /s	ISO 22007-4
Thermal diffusivity, thruplane	0.22	mm ² /s	ISO 22007-4
Specific heat capacity	0.000549	BTU/(lb-F)	ISO 22007-4

Electrical properties	Value	Unit	Test Standard
Volume resistivity, 23 °C	>1E14/-	Ohm*m	IEC 62631-3-1
Surface resistivity, 23 °C	>1E13/-	Ohm	IEC 62631-3-2
Electric strength, 23 °C (AC)	1140/-	kV/in	IEC 60243-1
Comparative tracking index	PLC 0/-	-	UL 746
Comparative tracking index CTI 50 drops	Group I 600	- V	IEC 60112 IEC 60112
CTI 100 drops	600	V	IEC 60112

VDA Properties	Value	Unit	Test Standard
FMVSS	SE	-	ISO 3795 (FMVSS 302)
FMVSS	0.0394	in	ISO 3795 (FMVSS 302)

Typical injection molding processing conditions

Temperature	Value	Unit
Melt temperature	≤518	°F

Other text information**Injection Molding Preprocessing**

PA materials, stocked in a moisture-proof packaging, can be processed without drying; however, it is always recommended drying the product that comes from a large package (e.g. Octabin). The moisture content suggested for the injection molding process should be lower than 0.15%, according to the grade and to the molded part characteristics. The materials containing flame retardants should have moisture content below 0.10%. Red phosphorous containing grades must always be dried below 0.08%. The drying time depends on the moisture content and the drying conditions. Typically, 4-8 hours at 80-90 °C using dehumidified air (dew point of -20 °C) are suitable conditions for a starting moisture content of 0.20%-0.40%.

Injection molding

The following conditions apply to a standard injection molding process. Machine temperatures: barrel 265-290 °C (PA66), 235-270 °C (PA6), nozzle and hot runners up to 300 °C (up to 290 °C products with flame retardants). Mold temperatures: 60-80 °C, (80-100 °C highly reinforced grades). Back pressure: typically, 5-10 bar (hydraulic pressure). Temperatures exceeding 300 °C and long residence time could lead to additives degradation and brittleness of the material. In case of gas generation in the melt, please verify moisture content and processing temperatures. Usage of regrind is possible depending on the molded part characteristics. For further details, please refer to the document 'Instructions for injection molding' or contact our technical support team.

Injection Molding Postprocessing

PA materials reach their final performance with a water content of about 1.5 to 3.5% by weight, depending on the type. This percentage corresponds to the point of equilibrium between the rates of absorption and desorption of moisture. After molding, in favorable environmental conditions, a part can quickly absorb moisture up to 0.5-1.0%, while the equilibrium will be reached during its life. A conditioning treatment can accelerate further the initial water absorption of the molded parts. Conditioning is usually carried out in hot and humid environment (for example 50 °C, 100% RH), inside climatic chambers. Slight dimensional variations (increase in volume due to the water absorbed) must be considered, especially in unfilled grades. Post-treatments of parts may also include the annealing (60-80 °C in oven, up to four hours). This procedure can be useful to relax any internal stresses.

Characteristics

Special Characteristics	Flame retardant, Heat resistant
Product Categories	Glass reinforced

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Processing	Injection molding
Delivery Form	Granules
Additives	Flame retarding agent

Other Approvals

OEM	Specification	Additional Information
VW Group*	VW50134	* best fitting grade to PA6-7-A, not officially approved