

FRIANYL® A3 GF25 V0

Polyamide 66 compound, 25% glass fiber reinforced, heat resistant, based on flame retardants halogen and red phosphorous free. UL listed V0@0.4mm all color.

Designed for Electrical applications requiring self-extinguishing properties combined with good mechanical performances, this grade meets the most stringent safety requirements for insulating materials.

Product information

Part Marking Code >(PA66+PA6)-GF25 FR(40)< ISO 11469

Rheological properties

Viscosity number	130 cm ³ /g	ISO 307, 1628
Moulding shrinkage range, parallel	0.3 - 0.6 %	ISO 294-4, 2577
Moulding shrinkage range, normal	0.6 - 0.9 %	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile modulus	9000 / 6300	MPa	ISO 527-1/-2
Tensile stress at break, 5mm/min	130 / 90	MPa	ISO 527-1/-2
Tensile strain at break, 5mm/min	3.5 / 6.5	%	ISO 527-1/-2
Flexural modulus	9000 / 6000	MPa	ISO 178
Flexural strength	205 / 150	MPa	ISO 178
Charpy impact strength, 23°C	60 / >60	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	9 / 12	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	7.5 / -	kJ/m ²	ISO 179/1eA
Ball indentation hardness, H 358/30	215	MPa	ISO 2039-1

Thermal properties

Melting temperature, 10°C/min	260 °C	ISO 11357-1/-3
Temperature of deflection under load, 1.8 MPa	210 °C	ISO 75-1/-2
Temperature of deflection under load, 0.45 MPa	235 °C	ISO 75-1/-2
Ball pressure test	175 °C	IEC 60695-10-2
RTI, electrical, 0.4mm	120 °C	UL 746B
RTI, electrical, 0.75mm	130 °C	UL 746B
RTI, electrical, 1.5mm	130 °C	UL 746B
RTI, electrical, 3.0mm	130 °C	UL 746B
RTI, impact, 0.75mm	90 °C	UL 746B
RTI, impact, 1.5mm	90 °C	UL 746B
RTI, impact, 3.0mm	90 °C	UL 746B
RTI, strength, 0.75mm	130 °C	UL 746B
RTI, strength, 1.5mm	130 °C	UL 746B
RTI, strength, 3.0mm	130 °C	UL 746B

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Flammability

Burning Behav. at 1.5mm nom. thickn.	V-0 class	UL 94
Burning Behav. at thickness h	V-0 class	UL 94
Thickness tested	0.40 mm	UL 94
Glow Wire Flammability Index, 0.4mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	960 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	775 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 0.4mm	750 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 1.5mm	800 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	800 °C	IEC 60695-2-13
FMVSS Class	SE	ISO 3795 (FMVSS 302)
Hot Wire Ignition, 0.75mm	PLC 0 s	UL 746A
Hot Wire Ignition, 1.5mm	PLC 0 s	UL 746A
Hot Wire Ignition, 3mm	PLC 0 s	UL 746A

Electrical properties

	dry/cond.		
Volume resistivity	>1E13/-	Ohm.m	IEC 62631-3-1
Surface resistivity	1E14/-	Ohm	IEC 62631-3-2
Electric strength	46/-	kV/mm	IEC 60243-1
Comparative tracking index	Group I		IEC 60112
Comparative tracking index, 23°C	PLC 0/-	PLC	UL 746A
High Amperage Arc Ignition Resistance, 0.75 mm	PLC 0	arcs	UL 746A
High Amperage Arc Ignition Resistance, 1.5 mm	PLC 0	arcs	UL 746A
High Amperage Arc Ignition Category, 1.5 mm	PLC 0	class	UL 746A

Physical/Other properties

Humidity absorption, 2mm	1.4 %	Sim. to ISO 62
Water absorption, 2mm	4.9 %	Sim. to ISO 62
Density	1360 kg/m ³	ISO 1183

Characteristics

Additives	Flame retardant, Non-halogenated/Red phosphorous free flame retardant
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Additional information

Injection molding	The following conditions apply to a standard injection moulding 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). Mould 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 moulded part characteristics. For further details, please refer to the document 'Instructions
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for injection moulding' or contact our technical support team.

Processing Texts

Injection molding

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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 moulding process should be lower than 0.15%, according to the grade and to the moulded 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 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 moulding, in favourable 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 moulded 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 taken into account, 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.

Other Approvals

Other Approvals

OEM	Specification	Additional Information
VW Group*	VW50133	* best fitting grade to PA66-5-A, not officially approved
Stellantis - PSA Group	PMP E&E	

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Renault	UB22a	BB/YG
Renault	UB22b	
Renault	UB22c	
Renault	UB22d	

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colourants or other additives may cause significant variations in data values. Properties of moulded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Other than those products expressly identified as medical grade (including by MT® product designation or otherwise), Celanese's products are not intended for use in medical or dental implants. Regardless of any such product designation, any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products.

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