FRIANYL® A3 RV0 YL 1018/M

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Designed for Electrical applications requiring self-extinguishing properties combined with easy processability and good surface quality, this grade meets the most stringent safety requirements for insulating materials.

Product information

Resin Identification	(PA66+PA6) FR(30)	ISO 1043
Part Marking Code	>(PA66+PA6) FR(30)<	ISO 11469

Rheological properties

	dry/cond.		
Viscosity number	3880 / *	in³/lb	ISO 307, 1628

Typical mechanical properties

	dry/cond.		
Tensile modulus	479000 / -	psi	ISO 527-1/-2
Tensile stress at yield, 50mm/min	11000 / -	psi	ISO 527-1/-2
Tensile strain at break, 50mm/min	10 / -	%	ISO 527-1/-2
Charpy impact strength, 23°C	>50 / -	ftlb/in²	ISO 179/1eU
Charpy notched impact strength, 23°C	1.43 / -	ftlb/in²	ISO 179/1eA

Thermal properties

	dry/cond.		
Melting temperature, 10°C/min	500 / *	°F	ISO 11357-1/-3
RTI, electrical, 0.4mm	266	°F	UL 746B
RTI, electrical, 0.75mm	266	°F	UL 746B
RTI, electrical, 1.5mm	266	°F	UL 746B
RTI, electrical, 3.0mm	266	°F	UL 746B
RTI, impact, 0.4mm	221	°F	UL 746B
RTI, impact, 0.75mm	221	°F	UL 746B
RTI, impact, 1.5mm	221	°F	UL 746B
RTI, impact, 3.0mm	221	°F	UL 746B
RTI, strength, 0.4mm	239	°F	UL 746B
RTI, strength, 0.75mm	248	°F	UL 746B
RTI, strength, 1.5mm	248 / *	°F	UL 746B
RTI, strength, 3.0mm	248	°F	UL 746B

Flammability

	dry/cond.		
Burning Behav. at 1.5mm nom. thickn.	V-0 / *	class	IEC 60695-11-10
Burning Behav. at thickness h	V-0 / *	class	IEC 60695-11-10
Thickness tested	0.0098 / *	in	IEC 60695-11-10
UL recognition	yes / *		UL 94
Glow Wire Flammability Index, 0.75mm	1760 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 1.5mm	1760 / -	°F	IEC 60695-2-12
Glow Wire Flammability Index, 3.0mm	1760 / -	°F	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	1430 / -	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 1.5mm	1430 / -	°F	IEC 60695-2-13
Glow Wire Ignition Temperature, 3.0mm	1430 / -	°F	IEC 60695-2-13
Hot Wire Ignition, 0.75mm	PLC 4 / *	s	UL 746A
Hot Wire Ignition, 1.5mm	PLC 3 / *	s	UL 746A
Hot Wire Ignition, 3mm	PLC 1 / *	s	UL 746A
Railway classification	R22 / R24		EN 45545-2

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Railway classification rating	HL3 / HL3		EN 45545-2

Electrical properties

	dry/cond.		
Volume resistivity	1E12 / -	Ohm.m	IEC 62631-3-1
Comparative tracking index	600 / -		IEC 60112

Physical/Other properties

	dry/cond.		
Humidity absorption, 2mm	2.2 / *	%	Sim. to ISO 62
Water absorption, 2mm	7.9 / *	%	Sim. to ISO 62
Density	0.0419 / -	lb/in³	ISO 1183

Characteristics

Processing	Injection Molding
Additives	Flame retardant
Special characteristics	Flame retardant

Additional 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%.

Processing

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.

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

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of equilibrium between the rates of absorption and desorption of moisture. After molding, in favorable environmental conditions, a part can quickly absorbs 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.

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