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FRIANYL® A3 V2XI

Polyamide 66 compound, heat stabilized, unfilled, flame retardant with halogens PBB and PBDE free. UL listed V2@0.4mm. *Designed for Electrical applications requiring self-extinguishing properties combined with ignition resistance, this grade meets the most stringent safety requirements for insulating materials for the household appliance industry.*

Product information

Part Marking Code	>PA66 FR(16+72)<	ISO 11469

Rheological properties

Moulding shrinkage range, parallel	0.8 - 1.2	%	ISO 294-4, 2577
Moulding shrinkage range, normal	0.8 - 1.2	%	ISO 294-4, 2577

Typical mechanical properties

	dry/cond.		
Tensile Modulus	3550 / -	MPa	ISO 527-1/-2
Stress at break, 5mm/min	60 / -	MPa	ISO 527-1/-2
Strain at break, 5mm/min	4.3 / -	%	ISO 527-1/-2
Flexural Modulus	2700 / -	MPa	ISO 178
Flexural Strength	110 / -	MPa	ISO 178
Charpy impact strength, 23 °C	65 / -	kJ/m²	ISO 179/1eU
Izod notched impact strength, 23 °C	4.4 / -	kJ/m²	ISO 180/1A
Izod impact strength, 23 °C	44 / -	kJ/m²	ISO 180/1U

Thermal properties

Temp. of deflection under load, 1.8 MPa	100	°C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	235	°C	ISO 75-1/-2
Ball pressure test	230	°C	IEC 60695-10-2
RTI, electrical, 0.75mm	140	°C	UL 746B
RTI, electrical, 1.5mm	140	°C	UL 746B
RTI, electrical, 3mm	140	°C	UL 746B
RTI, impact, 0.75mm	90	°C	UL 746B
RTI, impact, 1.5mm	90	°C	UL 746B
RTI, impact, 3mm	90	°C	UL 746B
RTI, strength, 0.75mm	115	°C	UL 746B
RTI, strength, 1.5mm	115	°C	UL 746B
RTI, strength, 3mm	115	°C	UL 746B

Flammability

Burning Behav. at 1.5mm nom. thickn.	V-2	class	UL 94
Burning Behav. at thickness h	V-2	class	UL 94
Thickness tested	0.4	mm	UL 94
UL recognition	yes		UL 94
Glow Wire Flammability Index, 0.75mm	850	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	960	°C	IEC 60695-2-12

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Glow Wire Ignition Temperature, 0.75mm	875	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 1mm	900	°C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	900	°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.		
Comparative tracking index	Group IIIa		IEC 60112
Comparative tracking index	PLC 1 / -	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

Other properties

Humidity absorption, 2mm	1	%	Sim. to ISO 62
Water absorption, 2mm	6	%	Sim. to ISO 62
Density	1330	kg/m³	ISO 1183

Injection

Melt Temperature Optimum	270	°C	Internal

Characteristics

Additives	Flame retardant

Additional information

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.

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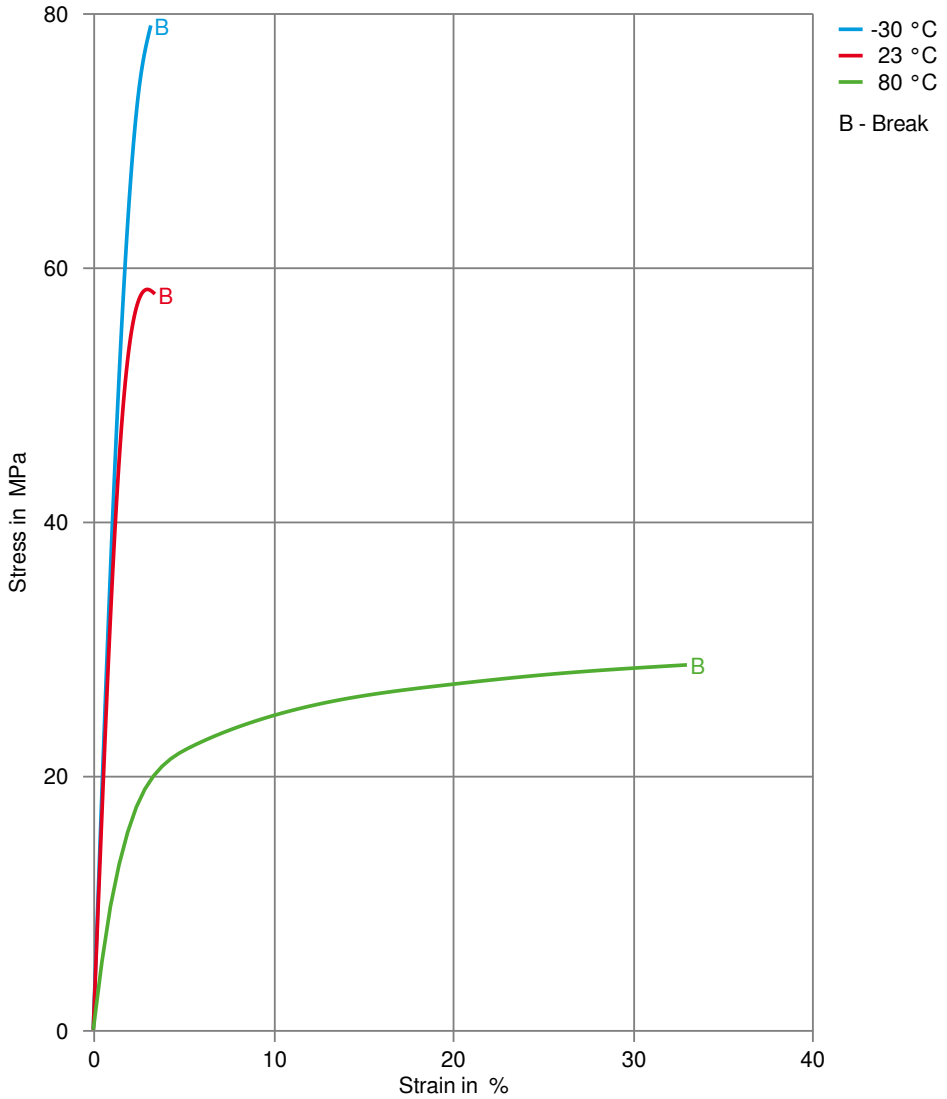
Stress-strain (dry)



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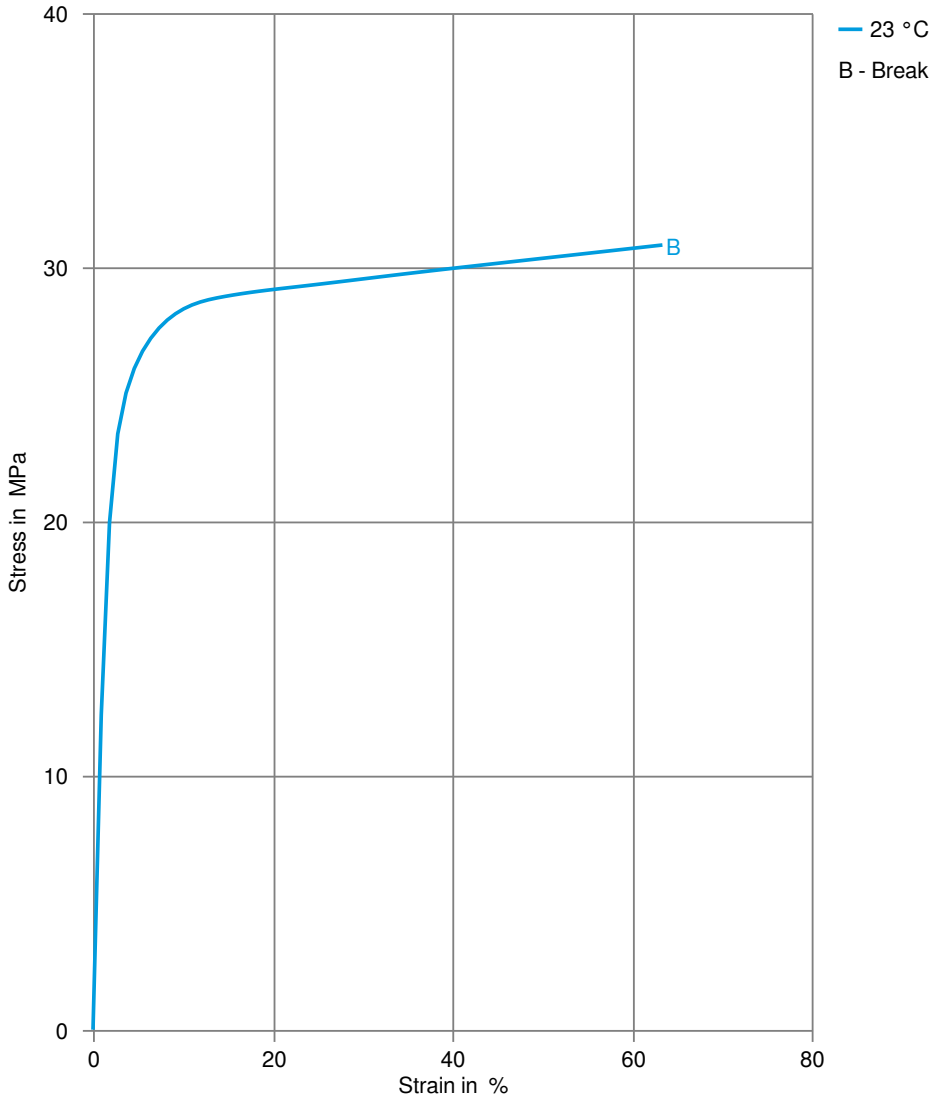
Stress-strain (cond.)



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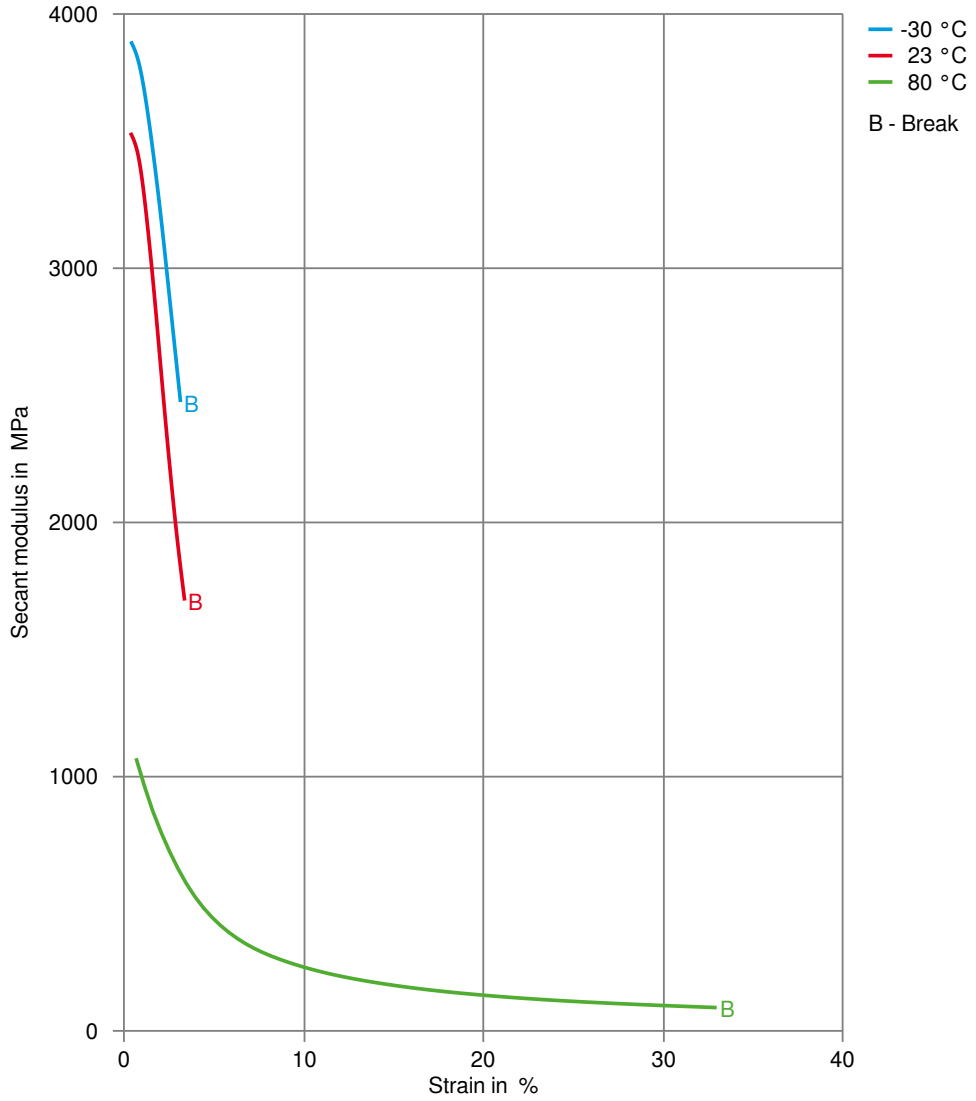
Secant modulus-strain (dry)



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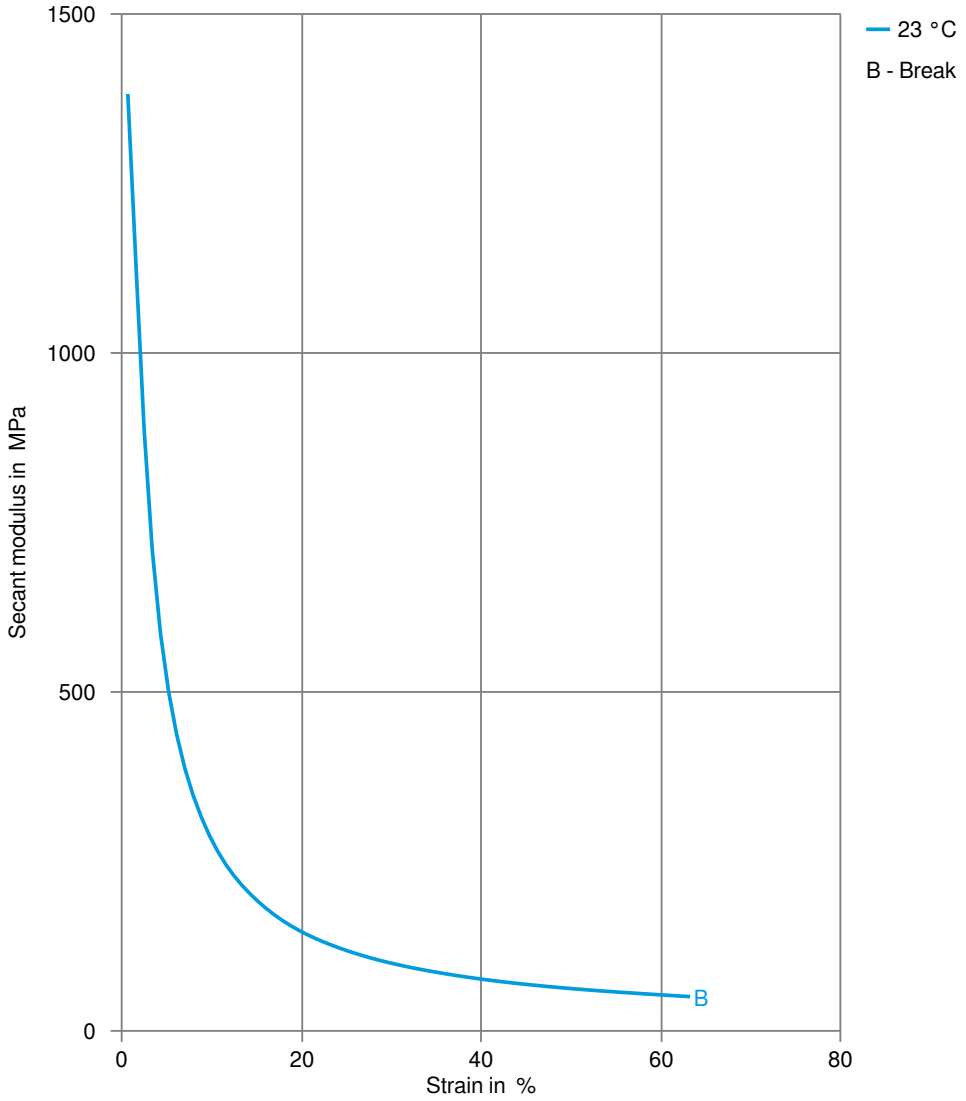
Secant modulus-strain (cond.)



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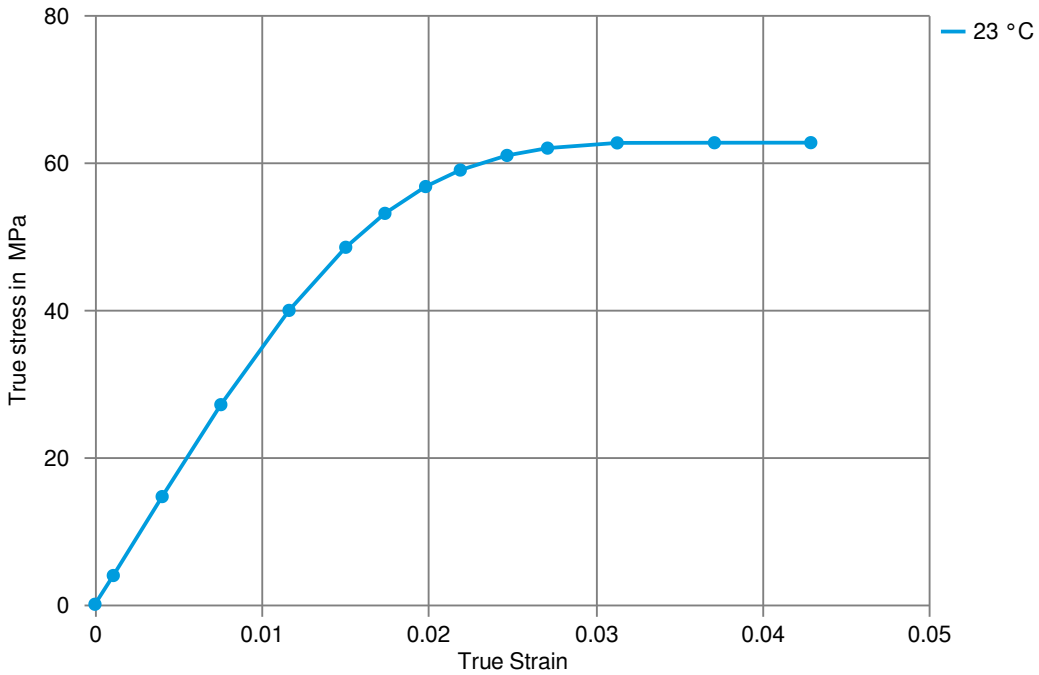
True stress-strain (dry)



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Processing Texts

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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 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 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 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.