

FRIANYL® B3 GF25 V0 BK 9005/P/F1

Polyamide 6 compound, 25% glass fiber reinforced, heat resistant, based on flame retardants halogen and red phosphorous free. UL listed V0@0.4mm and 5VA@3.0mm.

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	>PA6-GF25 FR(40)<	ISO 11469
-------------------	-------------------	-----------

Rheological properties

Melt volume-flow rate	8 cm ³ /10min	ISO 1133
Temperature	230 °C	
Load	5 kg	
Viscosity number	140 cm ³ /g	ISO 307, 1157, 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	8800 / 5700	MPa	ISO 527-1/-2
Stress at break, 5mm/min	130 / 90	MPa	ISO 527-1/-2
Strain at break, 5mm/min	3 / 7.5	%	ISO 527-1/-2
Flexural Modulus	8500 / -	MPa	ISO 178
Flexural Strength	200 / -	MPa	ISO 178
Charpy impact strength, 23°C	58 / 62	kJ/m ²	ISO 179/1eU
Charpy impact strength, -30°C	48 / -	kJ/m ²	ISO 179/1eU
Charpy notched impact strength, 23°C	9 / 14	kJ/m ²	ISO 179/1eA
Charpy notched impact strength, -30°C	7 / 9	kJ/m ²	ISO 179/1eA
Ball indentation hardness, H 358/30	210	MPa	ISO 2039-1

Thermal properties

Melting temperature, 10°C/min	225 °C	ISO 11357-1/-3
Temp. of deflection under load, 1.8 MPa	210 °C	ISO 75-1/-2
Temp. of deflection under load, 0.45 MPa	220 °C	ISO 75-1/-2
Ball pressure test	175 °C	IEC 60695-10-2
RTI, electrical, 0.75mm	120 °C	UL 746B
RTI, impact, 0.75mm	100 °C	UL 746B
RTI, impact, 3mm	105 °C	UL 746B
RTI, strength, 0.75mm	125 °C	UL 746B
RTI, strength, 3mm	130 °C	UL 746B



FRIANYL® B3 GF25 V0 BK 9005/P/F1

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	3.2 mm	UL 94
Glow Wire Flammability Index, 0.75mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 2mm	960 °C	IEC 60695-2-12
Glow Wire Flammability Index, 3mm	960 °C	IEC 60695-2-12
Glow Wire Ignition Temperature, 0.75mm	775 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 2mm	800 °C	IEC 60695-2-13
Glow Wire Ignition Temperature, 3mm	800 °C	IEC 60695-2-13
FMVSS Class		ISO 3795 (FMVSS 302)

Electrical properties

	dry/cond.	
Volume resistivity	1E13/-	Ohm.m
Surface resistivity	1E13/-	Ohm
Electric strength	27/-	kV/mm
		IEC 60243-1

Other properties

Humidity absorption, 2mm	1.5 %	Sim. to ISO 62
Water absorption, 2mm	5 %	Sim. to ISO 62
Density	1360 kg/m³	ISO 1183

Injection

Melt Temperature Optimum	253 °C	Internal
--------------------------	--------	----------

Characteristics

Additives	Non-halogenated/Red phosphorous free flame retardant
-----------	--

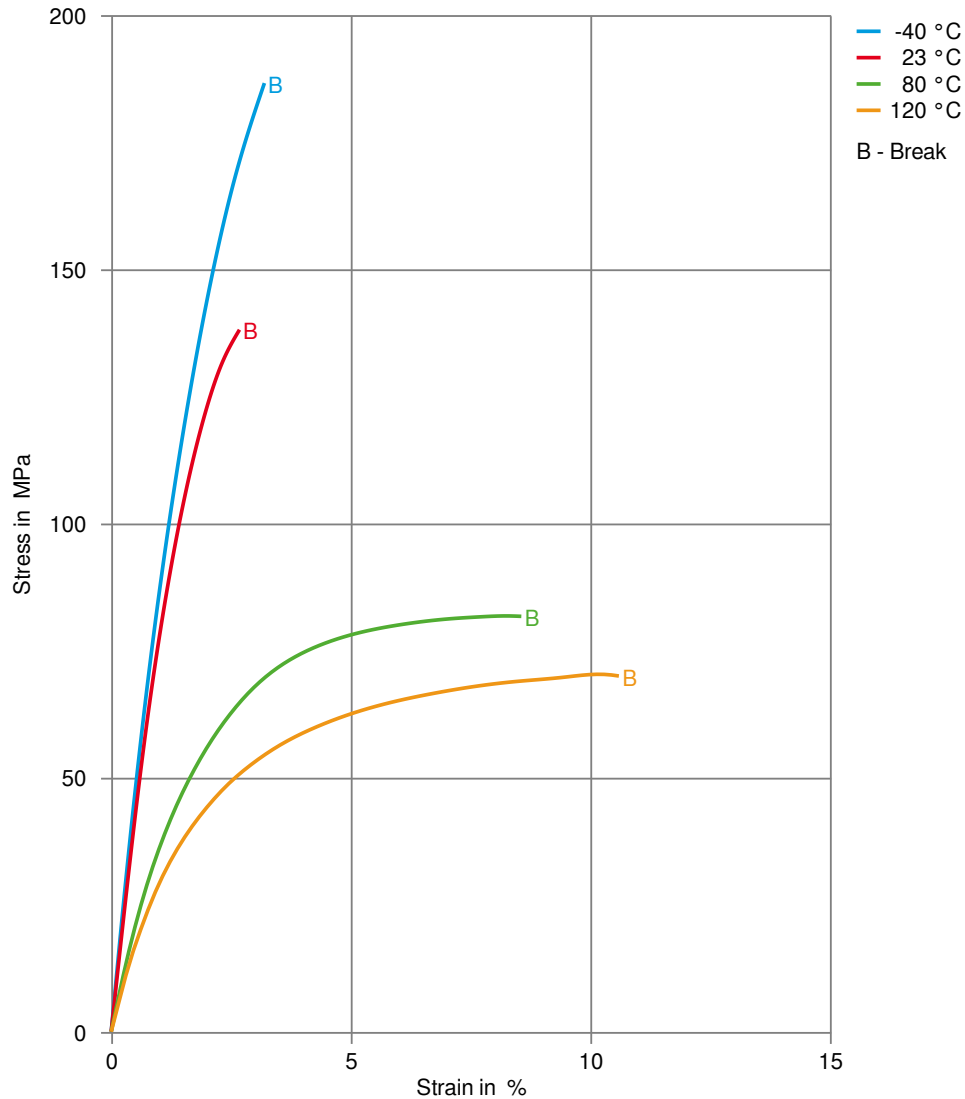
Additional information

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.
-------------------	--



FRIANYL® B3 GF25 V0 BK 9005/P/F1

Stress-strain (dry)

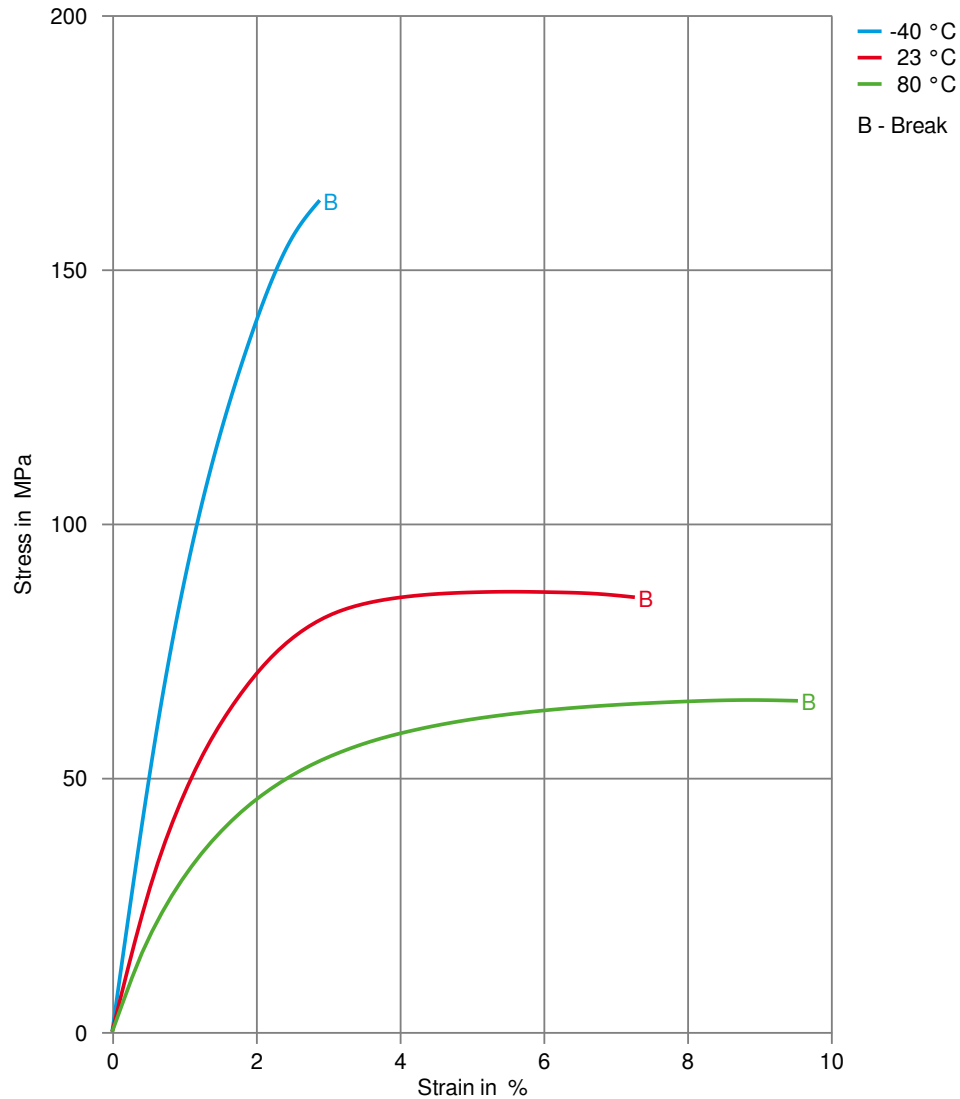


Printed: 2023-09-18



FRIANYL® B3 GF25 V0 BK 9005/P/F1

Stress-strain (cond.)

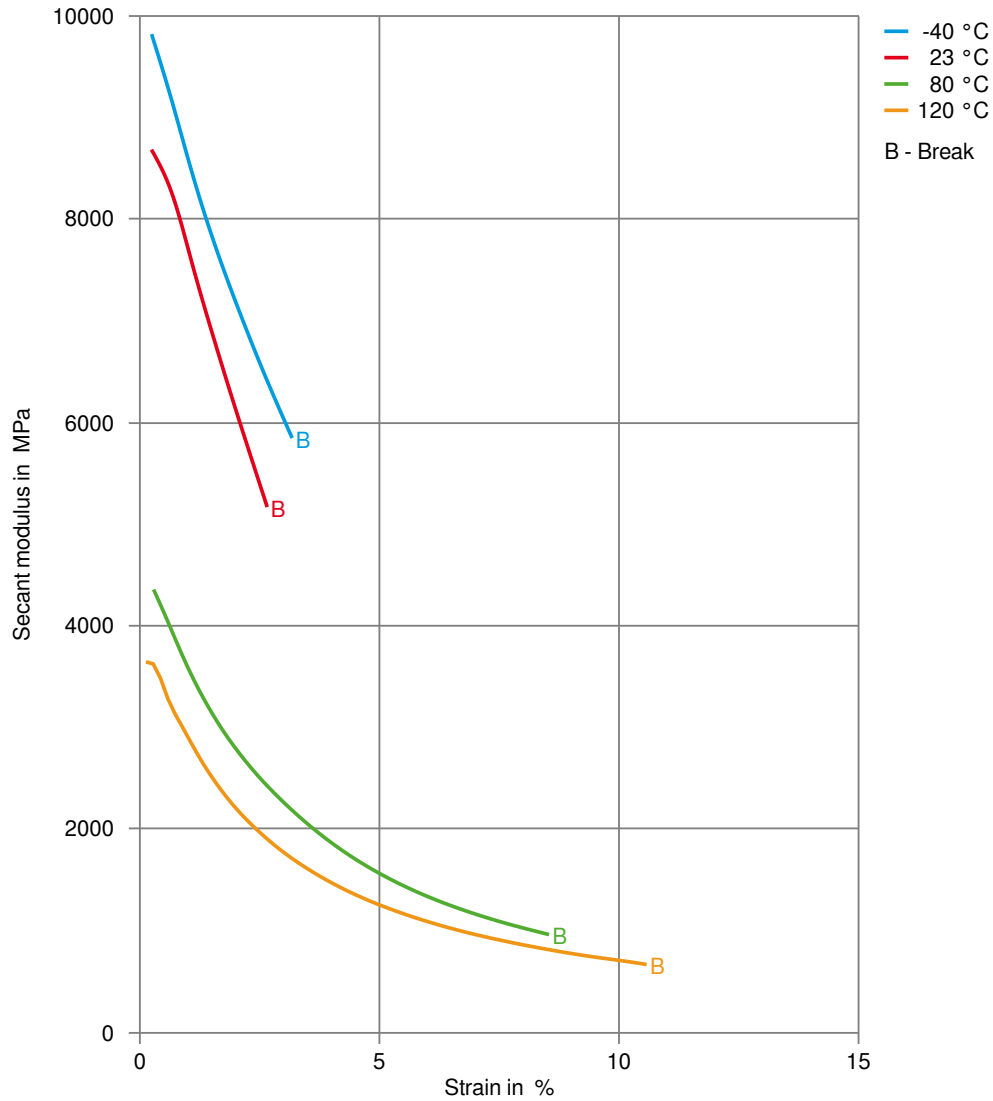


Printed: 2023-09-18



FRIANYL® B3 GF25 V0 BK 9005/P/F1

Secant modulus-strain (dry)

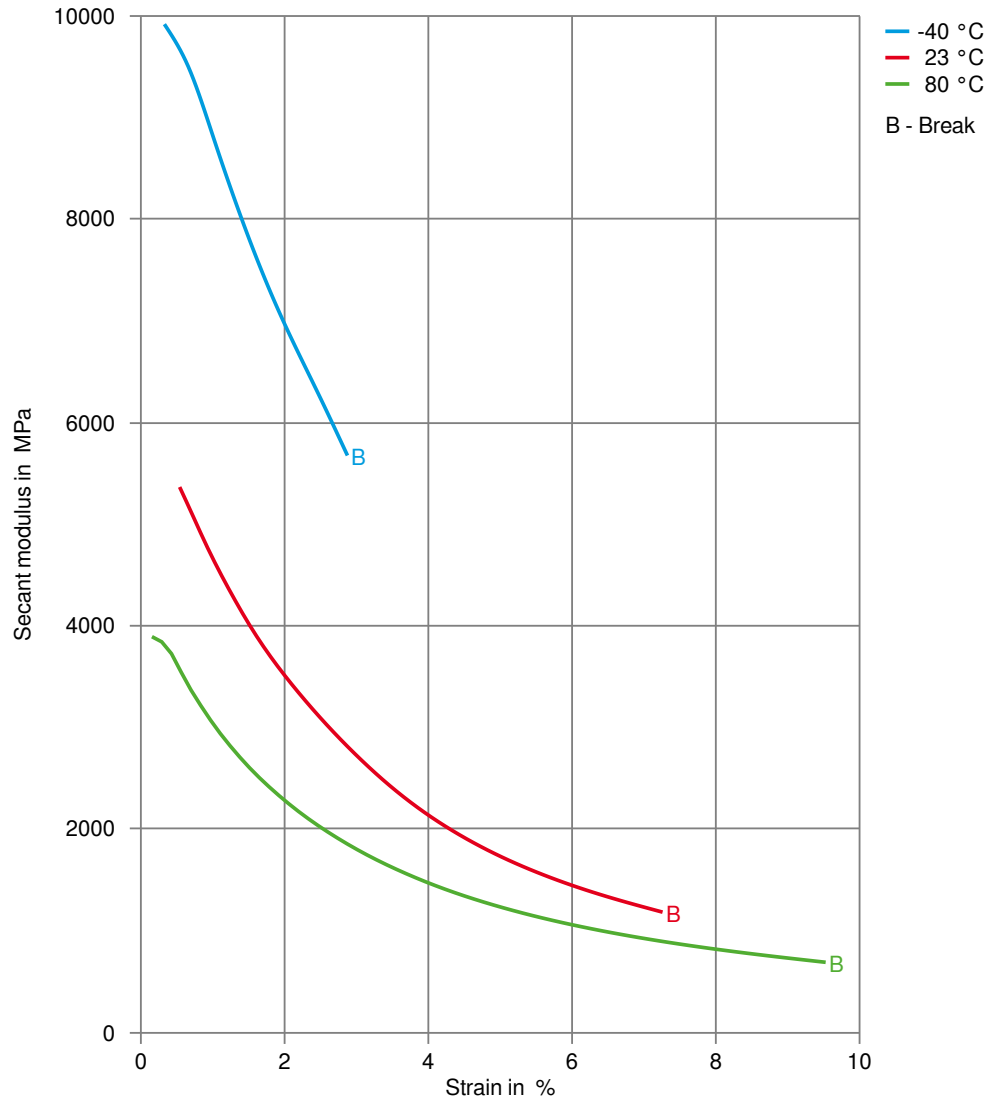


Printed: 2023-09-18



FRIANYL® B3 GF25 V0 BK 9005/P/F1

Secant modulus-strain (cond.)

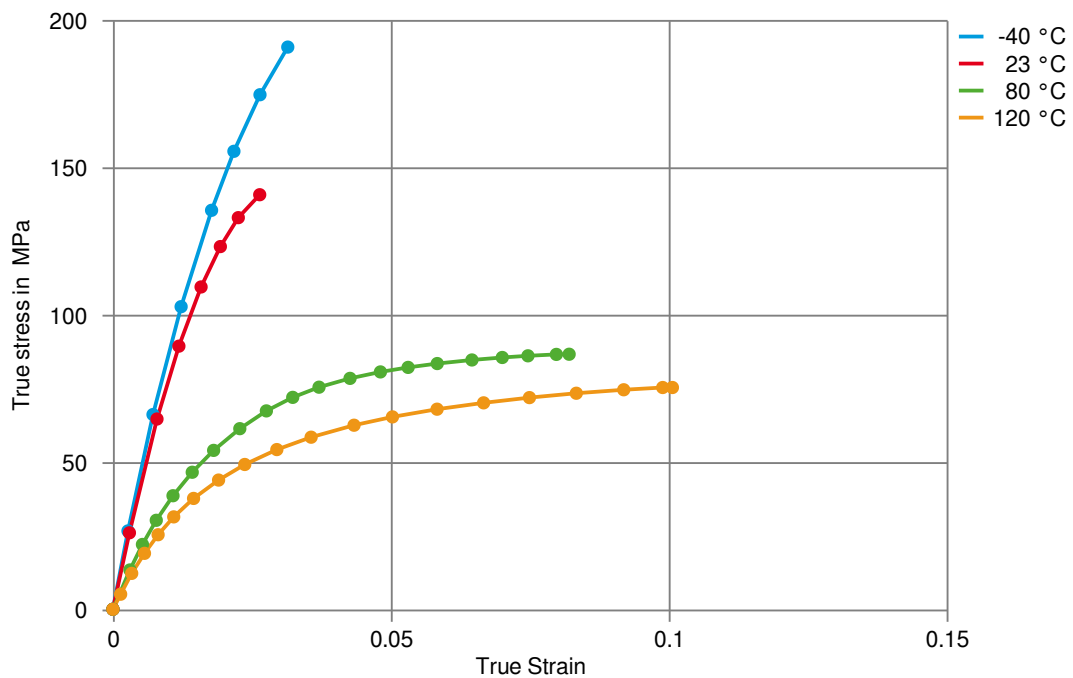


Printed: 2023-09-18



FRIANYL® B3 GF25 V0 BK 9005/P/F1

True stress-strain (dry)

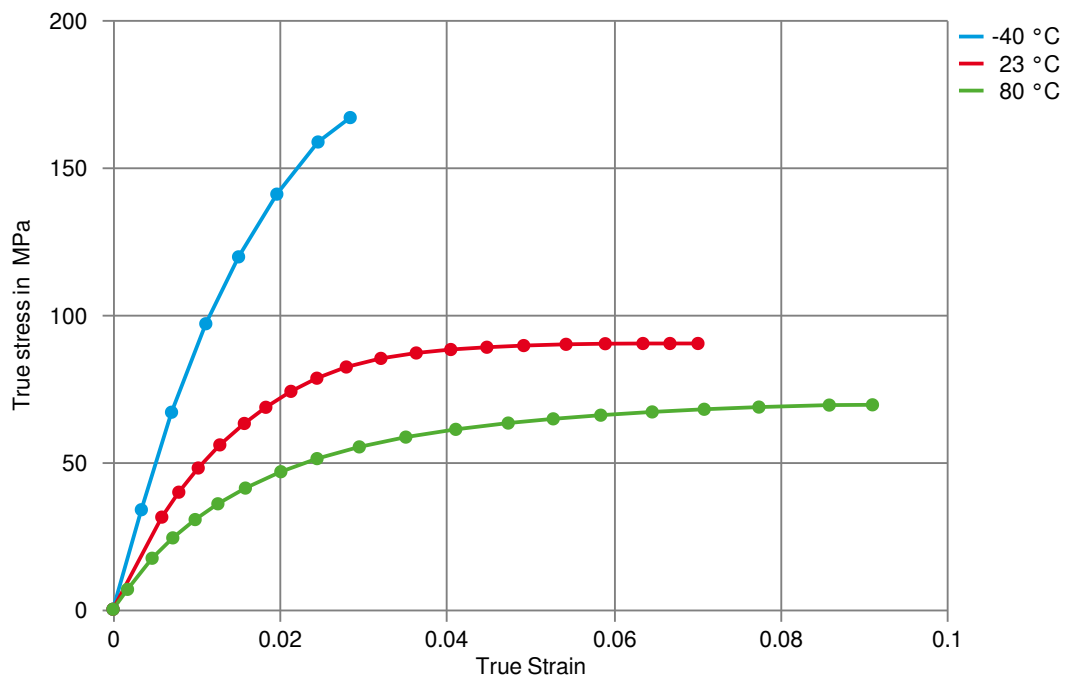


Printed: 2023-09-18



FRIANYL® B3 GF25 V0 BK 9005/P/F1

True stress-strain (cond.)



Printed: 2023-09-18



FRIANYL® B3 GF25 V0 BK 9005/P/F1

Processing Texts

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 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 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.

Other Approvals

Other Approvals

OEM	Specification	Additional Information
VW Group		No Spec, special part approval

Printed: 2023-09-18

