Celanese
The chemistry inside innovation™

NILAMID A3 HH GF30 BK 9005/H - PA66

Description

PA66, 30% glass fibre reinforced, high heat aging resistant
Car industry, Household appliances, Electrical devices.

Physical properties	dry / cond	Unit	Test Standard
Density	**1370** / **-**	kg/m³	ISO 1183
Molding shrinkage, parallel	**0.3 - 0.4**	%	ISO 294-4, 2577
Molding shrinkage, normal	**0.7 - 0.8**	%	ISO 294-4, 2577
Water absorption, 23°C-sat	**5.5** / *	%	ISO 62
Humidity absorption, 23°C/50%RH	**1** / *	%	ISO 62

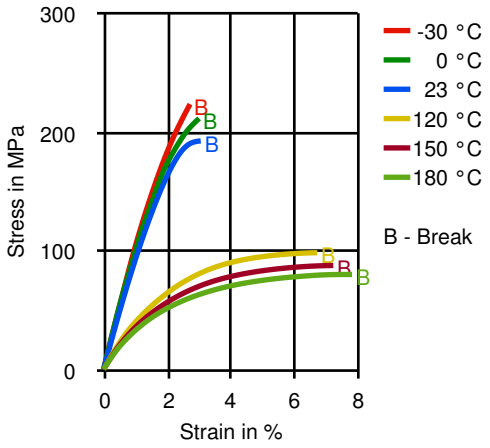
Mechanical properties	dry / cond	Unit	Test Standard
Tensile modulus	**9800** / **6800**	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	**185** / **120**	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	**2.8** / **5.5**	%	ISO 527-2/1A
Flexural modulus, 23°C	**8800** / **-**	MPa	ISO 178
Flexural stress at max. force	**275** / **-**	MPa	ISO 178
Charpy impact strength, 23°C	**70** / **85**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**60** / **55**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	**11** / **-**	kJ/m²	ISO 179/1eA
Izod impact notched, 23°C	**10** / **-**	kJ/m²	ISO 180/1A

Thermal properties	dry / cond	Unit	Test Standard
DTUL at 1.8 MPa	**250** / *	°C	ISO 75-1, -2
DTUL at 0.45 MPa	**260** / *	°C	ISO 75-1, -2
Flammability @3.2mm nom. thickn.	**HB** / *	class	UL 94
Flammability @1.6mm nom. thickn.	**HB** / *	class	UL 94
Flammability @0.8mm nom. thickn.	**HB** / *	class	UL 94
UL recognition (0.4)	**UL** / *	-	UL 94
Continuous service temperature	**140** / *	°C	DIN/IEC 60216-1

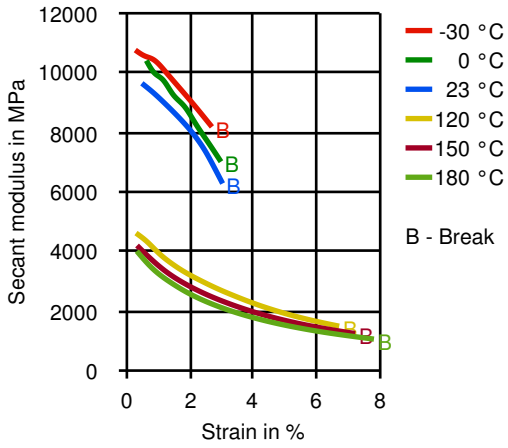
NILAMID A3 HH GF30 BK 9005/H - PA66

Diagrams

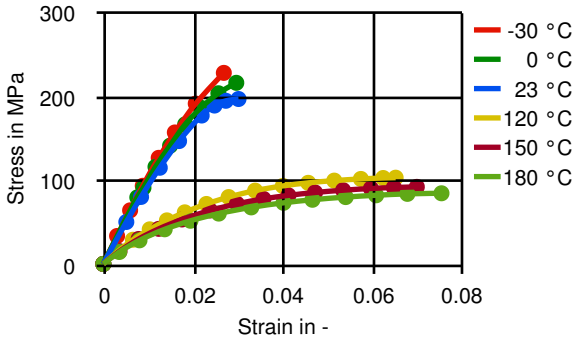
Stress-strain



Secant modulus-strain



True Stress-strain



Other text information

Injection Molding Preprocessing

PA materials, stocked in a moisture-proof packaging, can be processed without drying; however, it is always recomended 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 80-90C using dehumidified air (dew point of -20C) are suitable conditions for a starting moisture content of 0.20%-0.40%.

Injection molding

The following conditions apply to a standard injection moulding process. Machine temperatures: barrel 265-290C (PA66), 235-270C (PA6), nozzle and hot runners up to 300C (up to 290C products with flame retardants). Mould temperatures: 60-80C, (80-100C highly reinforced grades). Back pressure: typically 5-10 bar (hydraulic pressure). Temperatures exceeding 300C 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 for injection moulding" 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 moulding, in favourable 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 moulded parts. Conditioning is usually carried out in hot and humid environment (for example 50C, 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 (60-80C in oven, up to four hours). This procedure