

NILAMID A3 H CF40 NC 7016/S - PA66

Description

PA66, 40% carbon fibre reinforced, heat stabilized, high dimensional stability
 Car industry, Household appliances, Electrical devices.

Physical properties	dry / cond	Unit	Test Standard
Density	1310 / -	kg/m ³	ISO 1183
Molding shrinkage, parallel	0.2 - 0.4	%	ISO 294-4, 2577
Molding shrinkage, normal	0.4 - 0.6	%	ISO 294-4, 2577
Water absorption, 23°C-sat	4 / *	%	ISO 62
Humidity absorption, 23°C/50%RH	0.6 / *	%	ISO 62

Mechanical properties	dry / cond	Unit	Test Standard
Tensile modulus	26000 / -	MPa	ISO 527-2/1A
Tensile stress at break, 5mm/min	250 / -	MPa	ISO 527-2/1A
Tensile strain at break, 5mm/min	1.6 / -	%	ISO 527-2/1A
Flexural modulus, 23°C	21000 / -	MPa	ISO 178
Flexural stress at max. force	380 / -	MPa	ISO 178
Charpy impact strength, 23°C	50 / -	kJ/m ²	ISO 179/1eU
Izod impact notched, 23°C	10 / -	kJ/m ²	ISO 180/1A

Thermal properties	dry / cond	Unit	Test Standard
DTUL at 1.8 MPa	255 / *	°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 @0.8mm nom. thickn.	HB / *	class	UL 94
Continuous service temperature	130 / *	°C	DIN/IEC 60216-1

Other text 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 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

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 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 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.

