



1 | PRODUCT INFORMATION

NYLAFORCE[®] **dynamic**

Power pack for dynamical applications

With **NYLAFORCE[®] dynamic**, LEIS Polytechnik polymere Werkstoffe GmbH is introducing the second generation of feed up polyamides. The new series of products stands out thanks to its excellent mechanical properties.

NYLAFORCE[®] dynamic is manufactured using an optimized feed up process. In addition to a significant improvement in strength, it has been possible to increase the toughness of the materials enormously. So for instance the NYLAFORCE[®] dyn A 60 type achieves tensile strength of almost 300 MPa with charpy impact strength of 100 kJ/m². The NYLAFORCE[®] dyn B 50 type passes the impact test even without any break, with tensile strength of at least 265 MPa and with elongation at breaking point of over 3 %. A level that has not even been approached to date by polyamides with 50 % glass fibre reinforcement.

The new high-performance materials are especially suitable for functional parts subject to heavy loads with dynamic stress. They are also genuine alternatives to metals such as alloys of zinc and brass.

The product range consists so far of NYLAFORCE[®] dyn A 50, NYLAFORCE[®] dyn A 60, NYLAFORCE[®] dyn B 50, NYLAFORCE[®] dyn B 50 Z and NYLAFORCE[®] dyn B 60.

2 | TECHNICAL DATA



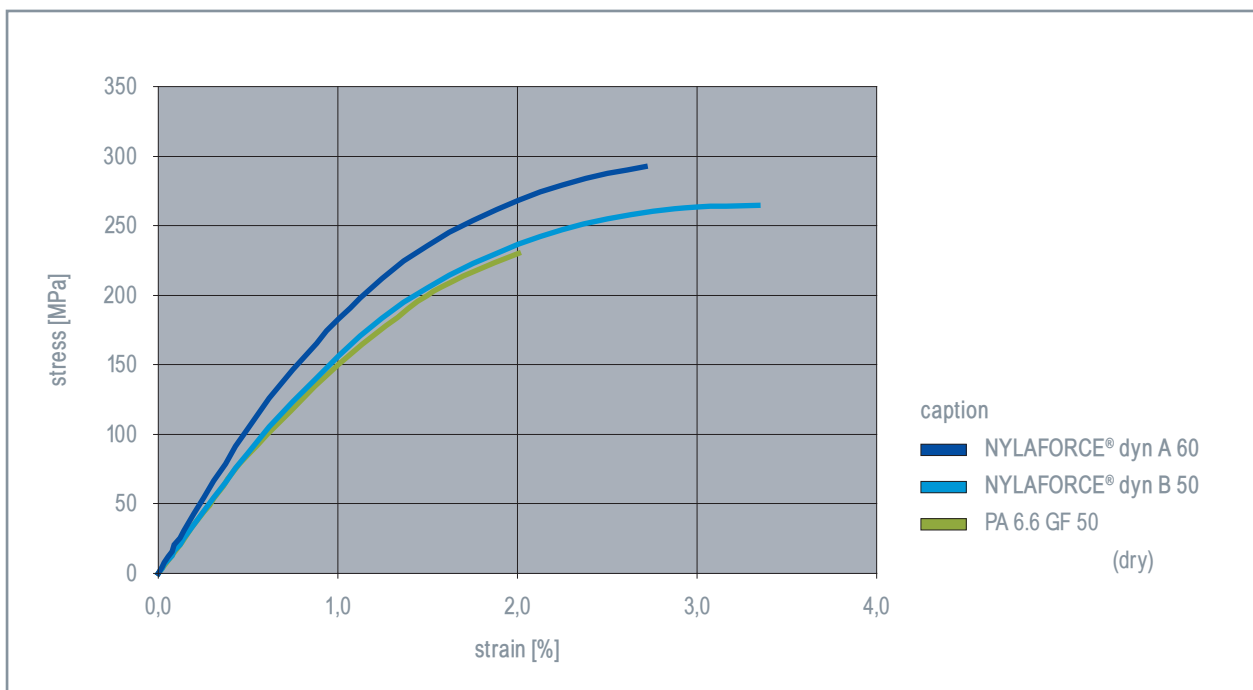
Physical and mechanical properties

NYLAFORCE®			dyn A 50	dyn A 60	dyn B 50	dyn B 50 Z	dyn B 60
property	standard	unit	values				
density	ISO 1183	g/cm ³	1,57	1,70	1,57	1,56	1,70
tensile strength dry 23 °C	ISO 527	MPa	275	290	265	265	285
tensile strength conditioned 23 °C	ISO 527 ISO 1110	MPa	195	200	185	185	200
elongation at break dry 23 °C	ISO 527	%	2,9	2,6	3,3	3,1	3
elongation at break conditioned 23 °C	ISO 527 ISO 1110	%	4,3	3,9	5	4,6	4,5
tensile modulus dry 23 °C	ISO 527	MPa	18 000	23 000	18 000	17 500	22 000
tensile modulus conditioned 23 °C	ISO 527 ISO 1110	MPa	12 500	16 000	12 500	12 500	15 500
charpy impact strength unnotched dry	ISO 179/1eU	kJ/m ²	n. b.	100	n. b.	n. b.	n. b.
charpy impact strength notched dry	ISO 179/1eA	kJ/m ²	16	17	18	18	19
melt temperature	ISO 3146 (10K/min)	°C	260	260	221	221	221

These property values are guideline values for uncoloured materials and should only inform about application possibilities. The suitability for concrete application purposes will not be assured. It must be examined for each individual case. We also refer to our terms of sale and supply.

Stress-strain-diagram

Comparison of NYLAFORCE® dynamic and standard polyamide PA 6.6 GF 50



NYLAFORCE[®]
dynamic

Processing guidelines

NYLAFORCE[®] dynamic resins can be molded with usual types of molding machines. In principle the same processing conditions as for standard fibre glass reinforced nylon fit for **NYLAFORCE[®] dynamic**. Due to the high processing temperature and the abrasion of reinforced nylon, for barrel, screw and hot runner systems wear resistant steel must be specified. Heated, open nozzles are recommended for use in molding. For best molding and good part quality the actual shot size should be between 10 % and 70 % of the machine rated capacity and the screw design should be appropriate. A back-flow valve is necessary for molding.

Material drying

NYLAFORCE[®] dynamic resins are supplied dry (less than 0,2 % moisture by weight) and are ready to mold directly from the moisture-proof shipping containers. We recommend dry storage areas. The required final water content for best molding and part quality is less than 0,1 %, therefore we recommend pre-drying in a hopper dryer working with dehumidified air (dewpoint below -20 °C) or an oxygen-free environment (vacuum oven) at 80 to 90 °C for 4 to 12 hours. After drying hygroscopic materials like nylon have to be protected against atmospherical moisture.

Recommended machine parameters and tool temperature

parameter	range	recommendation
solid mass temperature NYLAFORCE [®] dyn A	280 °C to 310 °C	290 °C
solid mass temperature NYLAFORCE [®] dyn B	250 °C to 320 °C	290 °C
dosing speed	10 m/min to 20 m/min	15 m/min
back pressure	20 bar to 80 bar	40 bar
filling pressure	800 bar to 1500 bar	1200 bar
injection speed	high	high
tool temperature	80 °C to 140 °C	140 °C

The technical data is only for orientation and advice. For any construction and especially for the required grade of part quality the necessary adjustments have to be done. Therefor no obligation can be derived from this data.



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