

Connecting**Chemistry**

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POLYMERS DACH

Dryer Housing for
Air Spring Compressors in
NYLAFORCE® A 50 SCHWARZ-12643

Product Information

Metal Substitutes in the Automotive Sector - Dryer Housings for Air Spring Compressors

NYLAFORCE® A 50 SCHWARZ-12643 is a feed-up polyamide with a high hydrosysis resistance. A special form of stabilisation gives the material effective resistance to hydrolytic corrosion. The mechanical properties are scarcely impaired by this stabilisation.

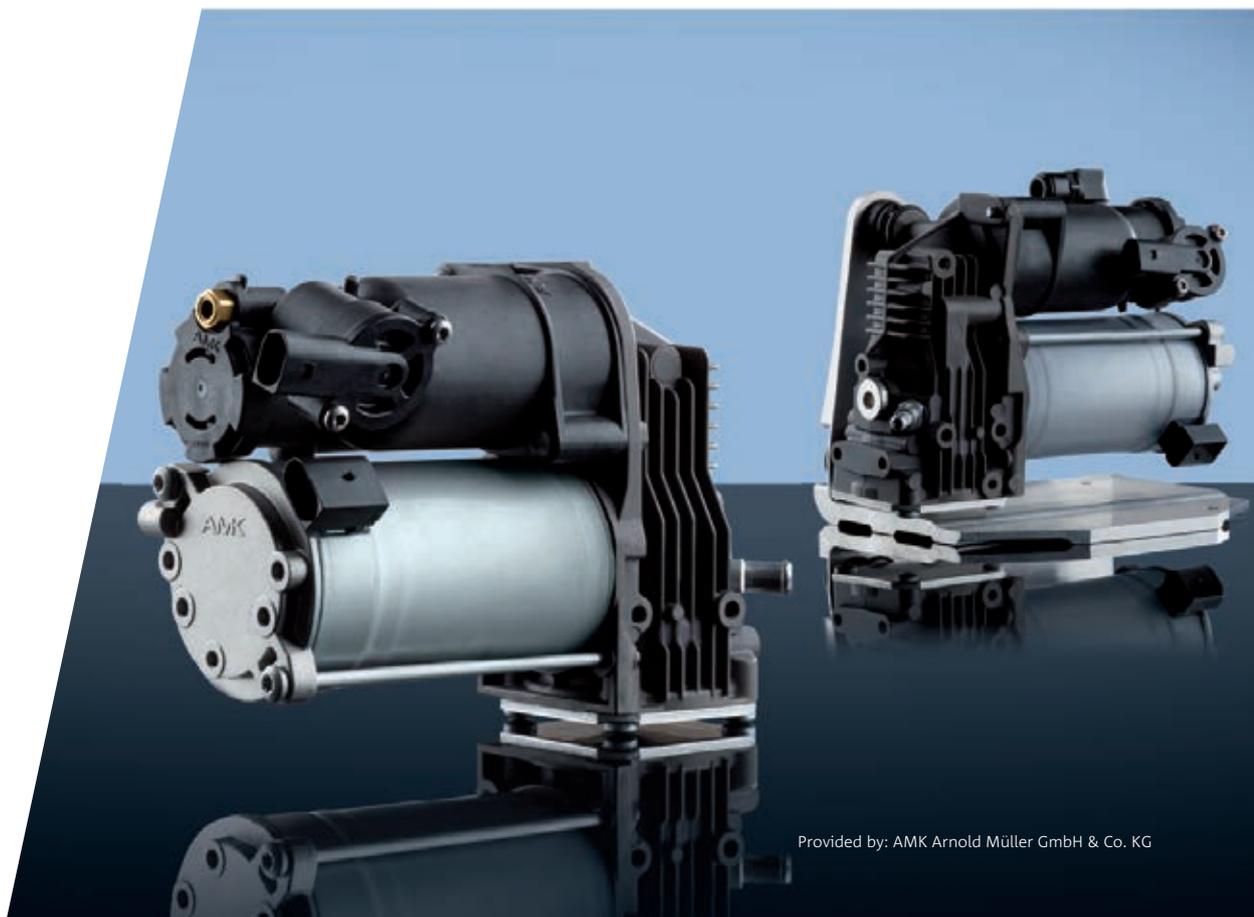
The material is used inter alia in the production of dryer housings for innovative air spring systems in automotive applications. The dryer housings are exposed to extremely high compressive loads inside the high-performance air spring compressors. To satisfy the automotive manufacturers specifications for deployment in top-of-the-range models, the parts must withstand bursting pressure tests at up to 80 bar.

NYLAFORCE® A 50 SCHWARZ-12643 has been developed for this application. With its special hydrolysis stabilization, the material optimally satisfies the requirements in terms of functionality, a long service life and part design. Despite the high glass fibre content of 50 %, the complex mould can be readily filled.

NYLAFORCE® A 50 SCHWARZ-12643 has extremely high mechanical strength, with very good strain values at the same time, and is thus eminently suited to housing parts subject to pressure that have previously been produced in metal.

NYLAFORCE® Features

- High-glass fiber reinforced construction materials based on PA 6 and PA 66
- Predestined for the substitution of metals
- For technical applications with the highest demands on strength and stiffness
- Outstanding physical and mechanical properties
- No PA 6 / PA 66 on the market with comparable mechanical values
- High tensile modulus and thus high dimensional stability
- High tensile strength with a still very high degree of elasticity
- Outstanding dimensional stability and low warpage
- Depending on the tool geometry, significant cycle time reduction possible
- Better processing properties than partially aromatic polyamides
- Also suitable for extrusion
- Universal application profile



Physical and mechanical Properties

PROPERTY	STANDARD	UNIT	NYLAFORCE® A 50 SCHWARZ-12643
Glass fibre reinforcement	–	%	50
Density	ISO 1183	g/cm ³	1.56
Tensile strength dry 23 °C	ISO 527	MPa	240
Elongation at break dry 23 °C	ISO 527	%	2.5
Tensile modulus dry 23 °C	ISO 527	MPa	17 500
Charpy impact strength unnotched dry 23 °C	ISO 179/1eU	kJ/m ²	85
Charpy impact strength notched dry 23 °C	ISO 179/1eA	kJ/m ²	12
Melting temperature	ISO 3146 (10K/min)	°C	260
Heat deflection temperature HDT/A	ISO 75	°C	250
Surface resistivity	DIN IEC 60093	Ohm	>10 ¹²
Volume resistivity	DIN IEC 60093	Ohm*m	>10 ¹²
Flammability (3 mm)	UL 94	–	HB
Humidity absorption	similar to ISO 62	%	1.4
Water absorption	similar to ISO 62	%	3.8
Moulding shrinkage	ISO 294 ¹⁾	%	0.1 - 0.5

1) Internal test method in accordance with ISO 294 (test specimen 60 mm x 60 mm x 2 mm).

Processing Advice

NYLAFORCE®

can be processed on most customary types of injection moulding machine. The same processing conditions as for glass fibre reinforced polyamides can fundamentally be employed. Due to the high processing temperatures and abrasive-ness of reinforced materials, the plasticising unit and hot runner system should be made of wear-resistant steel. Preference should be given to open nozzles over shut-off nozzles. To achieve a homogeneous melt temperature and a constant part geometry, use should be made of suitable plasticising screws with a non-return valve. The required shot size should be between 10 % and 70 % of the machine's rated capacity.

Material drying

NYLAFORCE® is supplied in moisture-proof containers, with a maximum moisture content of 0.2 %, and can be directly processed in this state. We recommend that it be stored in a dry room. In order to achieve an optimum part quality and avoid processing problems due to moisture that has been absorbed in the meantime, we recommend that the material be pre-dried until it has a residual moisture content of approx. 0.1 %. Drying should be performed in a dry-air dryer (dew point less than - 20 °C) or in a vacuum drying cupboard at 80 °C to 90 °C for 4 to 12 hours. Circulating-air dryers are not suitable for NYLAFORCE®. Once it has been dried, the material must be protected against renewed absorption of moisture from the environment.

Recommended Machine Parameters and Tool Temperature

PARAMETER	RANGE	RECOMMENDATION
Melt temperature	280 °C to 310 °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 specified values are given as a guide only. The values actually required will be a function of the geometry and the desired quality of the injection moulded part, in particular.

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