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- + very high strength and form stability
- + excellent surface quality
- + high capacity to absorb kinetic energy under dynamic stress
- + extremely high fatigue resistance to bending
- + simple processing

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## FEATURES

### 1 | PRODUCT INFORMATION

## **NYLAFORCE<sup>®</sup> B 50 Z**

**Excellent toughness** with the greatest strength and rigidity. These are the outstanding properties of the new **NYLAFORCE<sup>®</sup> B 50 Z** high-performance compound produced by using the feed up-process. The material was specially developed for car seat backs and seat shells. In this application, special demands were made in terms of shape stability and the material's fragmentation characteristics. A further basic requirement for realising this application was the outstanding quality of the surface of this highly-reinforced polyamide since the components are not further painted or coated.

Chair backs are subjected to extreme stress tests. Besides front and rear crash tests, they must also pass the critical "Protection from Loads" test. In this test the impact on the front seats of objects in the back of the car is simulated. All forces generated in a crash must be taken up and absorbed by the seat back and bottom or be conducted via the bolt connections to the bodywork since the bottom and back components contain no additional metal supports.

**NYLAFORCE<sup>®</sup> B 50 Z** was a clear winner in the selection of materials compared with all other plastics including long fibre reinforced polyamides and highly reinforced semi-aromatic plastics. Moreover **NYLAFORCE<sup>®</sup> B 50 Z** impresses with its simple processing and an excellent component surface.

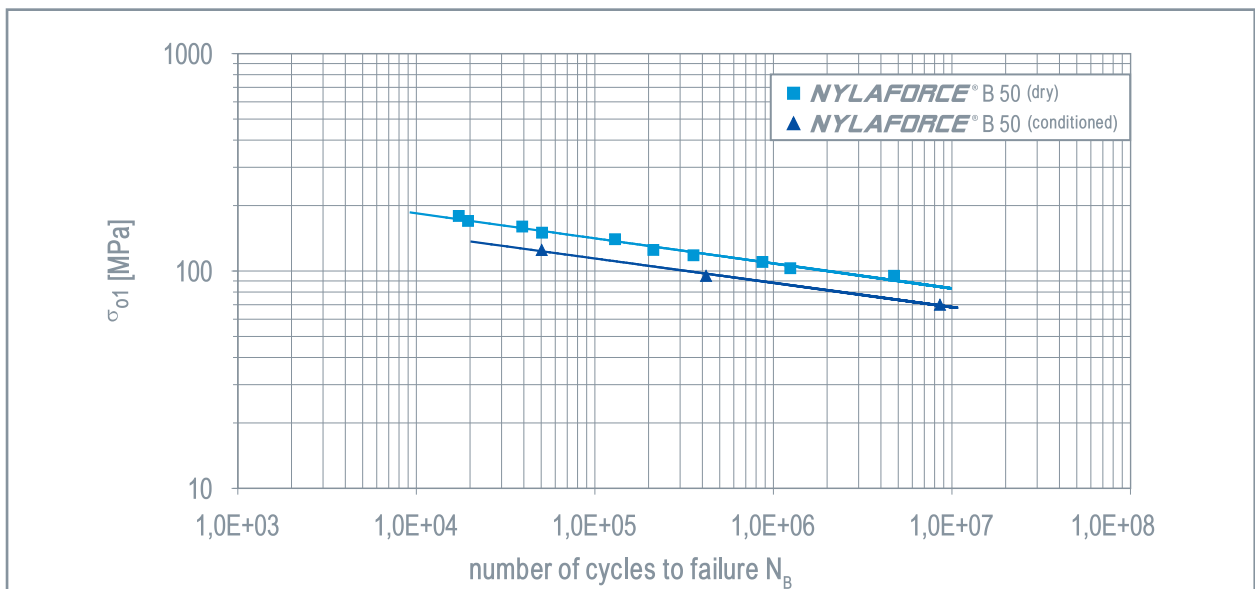
# 2 | TECHNICAL DATA

## NYLAFORCE® B 50 Z

property	standard	unit	value
density	ISO 1183	g/cm <sup>3</sup>	1,56
tensile strength dry 23 °C	ISO 527	MPa	220
tensile strength conditioned 23 °C <sup>1)</sup>	ISO 527	MPa	145
elongation at break dry 23 °C	ISO 527	%	2,6
elongation at break conditioned 23 °C <sup>1)</sup>	ISO 527	%	5,0
tensile modulus dry 23 °C	ISO 527	MPa	16 500
tensile modulus conditioned 23 °C <sup>1)</sup>	ISO 527	MPa	11 500
charpy impact strength unnotched, dry	ISO 179/1eU	kJ/m <sup>2</sup>	85
charpy impact strength conditioned 23 °C <sup>1)</sup>	ISO 179/1eU	kJ/m <sup>2</sup>	86
charpy impact strength notched dry	ISO 179/1eA	kJ/m <sup>2</sup>	14
charpy impact strength notched conditioned 23 °C <sup>1)</sup>	ISO 179/1eA	kJ/m <sup>2</sup>	26
melt temperature	ISO 3146 (10K/min)	°C	221

<sup>1)</sup> Conditioned based on EN ISO 1110. | These property values are guide values 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.

### Flexural fatigue test NYLAFORCE® B 50



# 3 | TECHNICAL DATA

## ***NYLAFORCE***<sup>®</sup> B 50 Z

The results of the tension test on *NYLAFORCE*<sup>®</sup> B 50 Z only reflect some of the potential performance of this new kind of material. Whereas in the tension test only a single-axis tension situation is taken into account, multi-axis tension situations almost always arise in real applications. It is only under conditions of such real demands that *NYLAFORCE*<sup>®</sup> B 50 Z can really show off its performance. Beside its high capacity to absorb kinetic energy *NYLAFORCE*<sup>®</sup> B 50 Z features an excellent fatigue strength. The s-n curve of the flexural fatigue test shows the performance for a frequency of 8 Hertz.

### Processing guidelines

*NYLAFORCE*<sup>®</sup> B 50 Z can be processed on all the usual injection moulding machines. The same processing conditions apply as for standard polyamides. It is essential for the plasticising unit to be made of a wear-resistant material because of the heavy abrasion caused by glass fibres. In order to achieve an even temperature throughout the solid mass and consistent geometry of components, the injection volume may only be a maximum of 70% of the machine's capacity. Open nozzles are preferable to closed nozzles. *NYLAFORCE*<sup>®</sup> B 50 Z is dry packed in moisture-proof packaging after manufacture. It should be stored in a dry, protected place.

Drying: For *NYLAFORCE*<sup>®</sup> B 50 Z we recommend drying in a vacuum or dry air oven. The drying time should be about 4 hours at a temperature of 80 to 90°C.

### Recommended machine parameters | tool temperature

parameter	range	recommendation
solid mass temperature	250 to 320 °C	290 °C
filling pressure	800 to 1500 bar	1200 bar
injection speed	high	high
tool temperature	80 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.