

## **PROVISIONAL DATA SHEET**

### **GRILAMID XE 3926 BLACK 9992**

#### **General product description**

Grilamid XE 3926 black 9992 is a low viscosity extrusion type, based on Polyamide 12 (PA 12).

The special features of Grilamid XE 3926 black 9992 are:

- Very good chemical resistance
- Good adhesion to Polymer Optical Fibres (POF)
- Low influence on the dampening of the transmission of optical fibres
- Low density, low weight

#### **Application examples**

Grilamid XE 3926 black 9992 is especially suitable for high speed extrusion of thin walled inner sheathings for polymer optical fibres (POF).

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## PROPERTIES

### Mechanical Properties

		Standard	Unit	State	Grilamid XE 3926 black 9992
Tensile E-Modulus	1 mm/min	ISO 527	MPa	cond.	1100
Tensile strength at yield	50 mm/min	ISO 527	MPa	cond.	40
Elongation at yield	50 mm/min	ISO 527	%	cond.	15
Tensile strength at break	50 mm/min	ISO 527	MPa	cond.	50
Elongation at break	50 mm/min	ISO 527	%	cond.	>50
Impact strength	Charpy, 23°C	ISO 179/2-1eU	kJ/m <sup>2</sup>	cond.	no break
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m <sup>2</sup>	cond.	no break
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m <sup>2</sup>	cond.	7
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m <sup>2</sup>	cond.	6
Ball indentation hardness		ISO 2039-1	MPa	cond.	70

### Thermal Properties

Melting point	DSC	ISO 11357	°C	dry	178
Heat deflection temperature HDT/A	1.80 MPa	ISO 75	°C	dry	45
Heat deflection temperature HDT/B	0.45 MPa	ISO 75	°C	dry	115
Thermal expansion coefficient long.	23-55°C	ISO 11359	10 <sup>-4</sup> /K	dry	1.2
Thermal expansion coefficient trans.	23-55°C	ISO 11359	10 <sup>-4</sup> /K	dry	1.4
Maximum usage temperature	long term	ISO 2578	°C	dry	80-100
Maximum usage temperature	short term	ISO 2578	°C	dry	150

### Electrical Properties

Dielectric strength		IEC 60243-1	kV/mm	cond.	32
Comparative tracking index	CTI	IEC 60112	-	cond.	600
Specific volume resistivity		IEC 60093	Ω · m	cond.	10 <sup>11</sup>
Specific surface resistivity		IEC 60093	Ω	cond.	10 <sup>12</sup>

### General Properties

Density		ISO 1183	g/cm <sup>3</sup>	dry	1.01
Flammability (UL94)	0.8 mm	ISO 1210	rating	-	HB
Water absorption	23°C/sat.	ISO 62	%	-	1.5
Moisture absorption	23°C/50% r.h.	ISO 62	%	-	0.7

Product-nomenclature acc. ISO 1874: PA12, EHL, 14-010

## Processing information for the extrusion of Grilamid XE 3926 black 9992

This technical data sheet for Grilamid XE 3926 black 9992 provides you with useful information on material preparation, machine requirements, tooling and processing.

### MATERIAL PREPARATION

Grilamid XE 3926 black 9992 is delivered dry and ready for processing in sealed, air tight packaging. Pre-drying is not necessary provided the packaging is undamaged.

#### Storage

Sealed, undamaged bags can be kept over a long period of time in storage facilities which are dry, protected from the influence of weather and where the bags can be protected from damage.

#### Handling and safety

Detailed information can be obtained from the "Material Safety Data Sheet" (MSDS) which can be requested with every material order.

#### Drying

Grilamid XE 3926 black 9992 is dried and packed with a moisture content of  $\leq 0.10\%$ . Should the packaging become damaged or be left open too long, then the material must be dried. A too high moisture content can be shown by a foaming melt, excessive nozzle drool and silver streaks on the moulded part.

Drying can be done as follows:

##### Desiccant dryer

Temperature:	max. 80°C
Time:	4 - 12 hours
Dew point of the dryer:	-30°C

##### Vacuum oven

Temperature:	max. 100°C
Time:	4 - 12 hours

#### Drying temperature

Polyamides are subject to the affects of oxidation at temperatures above 80°C in the presence of oxygen. Hence temperatures above 80°C for desiccant dryers and temperatures above 100°C for vacuum ovens should be avoided.

With longer residence times (over 1 hour) hopper heating or a hopper dryer (80°C) is useful.

### MACHINE REQUIREMENTS

Grilamid XE 3926 black 9992 can be processed economically and without problems on all machines suitable for polyamides.

#### Screw

Wear protected, universal screws are recommended (3 zones).

##### Screw

Length:	24 D - 25 D
Compression ratio:	2.8:1 - 3.5:1

#### Grooved Feeding Zone

A grooved bush is usually not recommended for the extrusion of polyamides grades. Anyhow, in order to obtain a higher through-put by using a grooved bush it's depth should not exceed 0.5 mm.

### PROCESSING

#### Basic machine settings

In order to start up the machine for processing Grilamid XE 3926 black 9992, the following basic settings are recommended:

##### Temperatures

Hopper zone	60 - 90°C
Feeding zone	160 - 170°C
Compression zone	180 - 200°C
Metering zone	190 - 220°C
Head	190 - 220°C
Nozzle	190 - 220°C
Melt	190 - 220°C

## CUSTOMER SERVICES

EMS-GRIVORY is a specialist in polyamide synthesis and the processing of these materials. Our customer services are not only concerned with the manufacturing and supply of engineering thermoplastics but also provide full technical support including:

- Rheological design calculation / FEA
- Prototype tooling
- Material selection
- Processing support
- Mould and component design

We are happy to advise you. Simply call one of our sales offices.

The recommendations and data given are based on our experience to date, however, no liability can be assumed in connection with their usage and processing.

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