

PROVISIONAL DATA SHEET

GRILAMID XE 3817 BLACK 9992

General product description

Grilamid XE 3817 black 9992 is a medium viscosity, heat and UV-stabilised Polyamid 12.

Grilamid XE 3817 black 9992 is especially suitable for the coating of metal tubes and offers the following features:

- high heat resistance
- very good chemical and oil resistance
- very good surface finish
- high abrasion resistance
- resistant to termite attacks

Grilamid XE 3817 black 9992 can generally be used for sheathing applications, such as cable or plastic tubing. Due to its good processing properties Grilamid XE 3817 black 9992 can be used for the extrusion of corrugated tubing as well as for films.

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PROPERTIES

Mechanical Properties

		Standard	Unit	State	Grilamid XE 3817 black 9992
Tensile E-Modulus	1 mm/min	ISO 527	MPa	dry cond.	1600 1200
Tensile strength at yield	50 mm/min	ISO 527	MPa	dry cond.	50 40
Elongation at yield	50 mm/min	ISO 527	%	dry cond.	5 10
Tensile strength at break	50 mm/min	ISO 527	MPa	dry cond.	50 50
Elongation at break	50 mm/min	ISO 527	%	dry cond.	> 50 > 50
Impact strength	Charpy, 23°C	ISO 179/2-1eU	kJ/m ²	dry cond.	no break no break
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m ²	dry cond.	no break no break
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m ²	dry cond.	6 7
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m ²	dry cond.	6 6
Shore hardness D		ISO 868	-	dry cond.	75 70

Thermal Properties

Melting point	DSC	ISO 11357	°C	dry	178
Heat deflection temperature HDT/A	1.80 MPa	ISO 75	°C	dry	50
Heat deflection temperature HDT/B	0.45 MPa	ISO 75	°C	dry	115
Thermal expansion coefficient long.	23-55°C	ISO 11359	10 ⁻⁴ /K	dry	1.2
Thermal expansion coefficient trans.	23-55°C	ISO 11359	10 ⁻⁴ /K	dry	1.4
Maximum usage temperature	long term	ISO 2578	°C	dry	90 - 110
Maximum usage temperature	short term	ISO 2578	°C	dry	150

Electrical Properties

Dielectric strength		IEC 60243-1	kV/mm	dry cond.	36 35
Comparative tracking index	CTI	IEC 60112	-	cond.	600
Specific volume resistivity		IEC 60093	Ω · m	dry cond.	10 ¹¹ 10 ¹¹
Specific surface resistivity		IEC 60093	Ω	cond.	10 ¹²

General Properties

Density		ISO 1183	g/cm ³	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
Linear mould shrinkage	long.	ISO 294	%	dry	0.80
Linear mould shrinkage	trans.	ISO 294	%	dry	0.85

Product-nomenclature acc. ISO 1874: PA12, MHR, 18-010

Processing information for the extrusion of Grilamid XE 3817 black 9992

This technical data sheet for Grilamid XE 3817 black 9992 provides you with useful information on material preparation, machine requirements and processing.

MATERIAL PREPARATION

Grilamid XE 3817 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 3817 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.

The 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. Visible yellowing of the material is an indication of oxidation 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 3817 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 - 3.5

Grooved Feeding Zone

We recommend smooth feeding sections for the extrusion of polyamides grades. If a grooved bush is used, then the groove depth should not exceed 0.5 mm. The cooling temperature of the grooved bush should be constant in range between 60°C to 90°C.

PROCESSING

Basic machine settings

In order to start up the machine for processing Grilamid XE 3817 black 9992, the following basic settings can be recommended:

Temperatures

Hopper zone	15 - 60°C
Feeding zone	170 - 210°C
Compression zone	200 - 240°C
Metering zone	200 - 240°C
Head	200 - 240°C
Die	200 - 240°C
Melt	200 - 250°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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