

PROVISIONAL DATA SHEET

GRILAMID XE 3982

General product description

Grilamid XE 3982 is a highly flexible extrusion grade, based on Polyamide 12 with following main attributes:

- High flexibility
- Low plasticiser migration (low blooming)
- Very good chemical resistance
- Good light and heat stability
- Good dimensional stability

Application examples

Flexible hoses and profiles, pneumatic tubes.

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PROPERTIES

Mechanical Properties		Standard	Unit	State	Grilamid XE 3982
Tensile E-Modulus	1 mm/min	ISO 527	MPa	cond.	195
Tensile strength at break	50 mm/min	ISO 527	MPa	cond.	„ 18
Elongation at break	50 mm/min	ISO 527	%	cond.	> 50
Impact strength	Charpy, 23°C	ISO 179/2-1eU	kJ/m ²	cond.	no break
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m ²	cond.	no break
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m ²	cond.	no break
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m ²	cond.	10
Shore-D hardness		ISO 868	-	cond.	53
Ball indentation hardness		ISO 2039-1	MPa	cond.	20
„ stress at 50% strain					
Thermal Properties					
Melting point	DSC	ISO 11357	°C	dry	170
Heat deflection temperature HDT/A	1.80 MPa	ISO 75	°C	dry	-
Heat deflection temperature HDT/B	0.45 MPa	ISO 75	°C	dry	80
Thermal expansion coefficient long.	23-55°C	ISO 11359	10 ⁻⁴ /K	dry	1.6
Thermal expansion coefficient trans.	23-55°C	ISO 11359	10 ⁻⁴ /K	dry	1.6
Maximum usage temperature	long term	ISO 2578	°C	dry	80 - 110
Maximum usage temperature	short term	ISO 2578	°C	dry	150
Electrical Properties					
Dielectric strength		IEC 60243-1	kV/mm	cond.	39
Comparative tracking index	CTI	IEC 60112	-	cond.	600
Specific volume resistivity		IEC 60093	Ω · m	cond.	10 ⁹
Specific surface resistivity		IEC 60093	Ω	cond.	10 ¹¹
General Properties					
Density		ISO 1183	g/cm ³	dry	0.99
Flammability (UL94)	0.8 mm	ISO 1210	rating	-	HB
Water absorption	23°C/sat.	ISO 62	%	-	1.2
Moisture absorption	23°C/50% r.h.	ISO 62	%	-	0.5
Linear mould shrinkage	long.	ISO 294	%	dry	0.6
Linear mould shrinkage	trans.	ISO 294	%	dry	1.4

Product-nomenclature acc. ISO 1874: PA12-HIP, EHL, 24-002

Processing information for the extrusion of Grilamid XE 3982

This technical data sheet for Grilamid XE 3982 provides you with useful information on material preparation, machine requirements, tooling and processing.

MATERIAL PREPARATION

Grilamid XE 3982 is delivered dry and ready for processing in sealed 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 3982 is dried and packed with a moisture content of $\leq 0.10\%$. Should the packaging become damaged or if it is left open too long, then the material must be dried. A too high moisture content becomes evident by bubbles in the melt strand, excessive nozzle drool and streaks on the 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 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. In order to detect oxidation it is advised to keep a small amount of granulate (light colour only!) as a comparison sample.

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

MACHINE REQUIREMENTS

Grilamid XE 3982 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. 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 3982, the following basic settings are recommended:

Temperatures

Hopper zone	cooled
Feeding zone	220 - 230°C
Compression zone	230 - 240°C
Metering zone	230 - 240°C
Head	230 - 240°C
Nozzle	230 - 240°C
Melt	230 - 240°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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