TECHNICAL DATA SHEET

GRILAMID L 25 LM

General product description

Grilamid L 25 LM is a heat and UV stabilized nylon 12 grade for tube extrusion.

According to DIN 73378 Grilamid L 25 LM corresponds to the type PA 12 HL. *

Grilamid L 25 LM fulfils the requirements of DIN 73378 and is especially developed for the direct contact of fuels.

Applications

Grilamid L 25 LM is used for fuel lines required to meet DIN 73378 specification

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EMS

PROPERTIES

Mechanical Properties

		Standard	Unit	State	Grilamid L 25 LM
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.	12
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/m²	cond.	ohne Bruch
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m²	cond.	ohne Bruch
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m²	cond.	10
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m²	cond.	7
Shore D hardness		ISO 868	-	cond.	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	125
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	cond.	32
Comparative tracking index	CTI	IEC 60112	-	cond.	600
Specific volume resistivity		IEC 60093	Ω · m	cond.	10^{11}
Specific surface resistivity		IEC 60093	Ω	cond.	10^{12}

General Properties

Density		ISO 1183	g/cm³	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: PA 12, MHLR, 18-010N

Processing information for the extrusion of Grilamid L 25 LM

This technical data sheet for Grilamid L 25 LM provides you with useful information on material preparation, machine requirements, tooling and processing.

MATERIAL PREPARATION

Grilamid L 25 LM 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 L 25 LM is dried and packed with a moisture content of ≤ 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. 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) hopper heating or a hopper dryer (80°C) is useful.

MACHINE REQUIREMENTS

Grilamid L 25 LM 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:	2.5 - 3:1

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 L 25 LM, the following basic settings are recommended:

Temperatures

Hopper zone	60 - 90°C
Feeding zone	230 - 240°C
Compression zone	240 - 250°C
Metering zone	240 - 250°C
Head	240 - 250°C
Nozzle	230 - 240°C
Melt	230 - 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.

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