TECHNICAL DATA SHEET

GRILAMID LV-2A NZ

General product description

Grilamid LV-2A NZ is a high viscosity polyamide 12 with 20% glass fibres and improved hydrolysis resistance compared to standard polyamide 12 materials. Grilamid LV-2A NZ has a high impact strength even at low temperatures.

Due to its very high melt strength, Grilamid LV-2A NZ is particularly well suited for the production of extrusion blow moulded articles, especially for large parts. It is processable on conventional as well as on 3 D-machines.

Grilamid LV-2A NZ is characterised by excellent resistance to most of the media used in automobiles, in particular by its resistance to zinc chloride solutions. In addition the material exhibits an unusually good resistance to hot water and antifreeze solutions.

This product is suitable for technical articles of all kinds, especially for applications in the automotive industry.

Examples for possible applications are:

- Cooling hoses
- Fuel filler necks
- Crankcase venting ducts

Grilamid LV-2A NZ key property profile:

- Polyamide 12
- Reinforced with a 20% glass fibre content
- High hydrolytic stability
- High impact strength
- Very high melt strength
- Suitable for extrusion blow moulding technology

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PROPERTIES

Mechanical Properties

		Standard	Unit	State	Grilamid LV-2A NZ
Tensile E-Modulus	1 mm/min	ISO 527	MPa	cond.	3500
Tensile strength at break	5 mm/min	ISO 527	MPa	cond.	80
Elongation at break	5 mm/min	ISO 527	%	cond.	15
Impact strength	Charpy, 23°C	ISO 179/2-1eU	kJ/m²	cond.	> 100
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m²	cond.	> 100
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m²	cond.	30
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m²	cond.	20
Ball indentation hardness		ISO 2039-1	MPa	cond.	95

Thermal Properties

Melting point	DSC	ISO 11357	°C	dry	178
Heat deflection temperature HDT/A	1.80 MPa	ISO 75	°C	dry	130
Heat deflection temperature HDT/B	0.45 MPa	ISO 75	°C	dry	160
Heat deflection temperature HDT/C	8.00 MPa	ISO 75	°C	dry	75
Thermal expansion coefficient long.	23-55°C	ISO 11359	10^{-4}/K	dry	0.4
Thermal expansion coefficient trans.	23-55°C	ISO 11359	10^{-4}/K	dry	1.5
Maximum usage temperature	long term	ISO 2578	°C	dry	90 - 120
Maximum usage temperature	short term	ISO 2578	°C	dry	150

Electrical Properties

Dielectric strength		IEC 60243-1	kV/mm	cond.	35
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	1.12
Flammability (UL94)	0.8 mm	ISO 1210	rating	-	HB
Water absorption	23°C/sat.	ISO 62	%	-	1.1
Moisture absorption	23°C/50% RH	ISO 62	%	-	0.5
Linear mould shrinkage	long.	ISO 294	%	dry	0.30
Linear mould shrinkage	trans.	ISO 294	%	dry	1.00

Product-nomenclature acc. ISO 1874: PA12, MHR, 22-040, GF20

Processing information for the extrusion of Grilamid LV-2A NZ

This technical data sheet for Grilamid LV-2A NZ provides you with useful information on material preparation, machine requirements, tooling and processing.

MATERIAL PREPARATION

Grilamid LV-2A NZ 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 LV-2A NZ 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 LV-2A NZ 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 LV-2A NZ, the following basic settings can be recommended:

Temperatures

Hopper zone	cooled
Feeding zone	220 - 230°C
Compression zone	220 - 230°C
Metering zone	220 - 230°C
Head	220 - 230°C
Nozzle	210 - 230°C
Melt	220 - 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.

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