

TECHNICAL DATA SHEET

GRILAMID L 20 HL BLACK 9563

General product description

Grilamid L 20 HL black 9563 is a, medium viscosity extrusion grade, based on Polyamide 12 (PA12).

Grilamid L20 HL black 9563 has been especially developed for external cable sheathing applications, it is UV-stabilised, heat stabilised and it is resistant to termites.

The special features of Grilamid L 20 HL black 9563 are:

- Maximum UV-resistance
- Heat stability
- Resistant to termites
- Good chemical resistance
- Good resistance to oil
- High surface quality
- High abrasion resistance
- Good dimensional stability
- Easy to process
- Low density, low weight

Application examples

Grilamid L 20 HL black 9563 is suitable for the outer sheathing layer of telecommunication cables.

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PROPERTIES

Mechanical Properties

		Standard	Unit	State	Grilamid L 20 HL black 9563
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 179/1eU	kJ/m ²	cond.	> 100
Impact strength	Charpy, -30°C	ISO 179/1eU	kJ/m ²	cond.	> 100
Notched impact strength	Charpy, 23°C	ISO 179/1eA	kJ/m ²	cond.	7
Notched impact strength	Charpy, -30°C	ISO 179/1eA	kJ/m ²	cond.	6
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	45
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	cond.	32
Comparative tracking index	CTI	IEC 60112	-	cond.	550
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/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, EHL, 18-010

Processing information for the extrusion of Grilamid L 20 HL black 9563

This technical data sheet for Grilamid L 20 HL black 9563 provides you with useful information on material preparation, machine requirements, tooling and processing.

MATERIAL PREPARATION

Grilamid L 20 HL black 9563 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 L20 HL black 9563 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

In desiccant dryers temperatures above 80°C should not be avoided. In vacuum ovens with low oxygen pressures, temperatures up to 100°C.

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

MACHINE REQUIREMENTS

Grilamid L 20 HL black 9563 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 not usually recommended for the extrusion of polyamides grades. In order to obtain a higher through-put by using a grooved bush it is depth should not exceed 0.5 mm. It is recommended to maintain a constant temperature of 60 - 90°C in the hopper zone.

PROCESSING

Basic machine settings

In order to start up the machine for processing Grilamid L 20 HL black 9563, the following basic settings recommended:

Temperatures

Hopper zone	60 - 90°C
Feeding zone	190 - 210°C
Compression zone	210 - 250°C
Metering zone	210 - 250°C
Nozzle	210 - 250°C
Melt	210 - 260°C
Cooling bath temperature	15 - 40 °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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