TECHNICAL DATA SHEET

GRILAMID L XE 10953 BLACK

General product description

Grilamid L XE 10953 BLACK is a high viscosity, flexible and antistatic (ESD) extrusion grade of Polyamide 12 (PA12).

Grilamid L XE 10953 BLACK is plasticised and heat stabilised.

The inherent colour of this material is black.

The main features of Grilamid L XE 10953 BLACK are:

- Antistatic
- Chemically resistant to engine fuels
- Flexible
- Good heat stability
- Good dimensional stability
- Good tube surface quality
- Easy processing
- Low density, low weight

Application examples

Grilamid L XE 10953 BLACK is suitable for the production of flexible tubes and profiles for use in automotive, industrial and electrical applications requiring antistatic properties and high tube surface quality.

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EMS

PROPERTIES

Mechanical Properties

		Standard	Unit	State	Grilamid L XE 10953 BLACK
Tensile E-Modulus	1 mm/min	ISO 527	MPa	dry cond.	500 400
Tensile strength at 50% Elongation	50 mm/min	ISO 527	MPa	dry cond.	30 30
Elongation at break	50 mm/min	ISO 527	%	dry cond.	> 50 > 50
Impact strength	Charpy, 23°C	ISO 179/2-1eU	kJ/m²	dry cond.	no break no break
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m²	dry cond.	no break no break
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m²	dry cond.	no break no break
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m²	dry cond.	10 10
Shore-D hardness		ISO 868	-	dry cond.	63 63

Thermal Properties

Melting point	DSC	ISO 11357	°C	dry	173
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	95
Thermal expansion coefficient long.	23-55°C	ISO 11359	10^{-6}/K	dry	140
Thermal expansion coefficient trans.	23-55°C	ISO 11359	10^{-6}/K	dry	180
Maximum usage temperature	long term	ISO 2578	°C	dry	90 - 110
Maximum usage temperature	short term	EMS	°C	dry	150

Electrical Properties

Dielectric strength		IEC 60243-1	kV/mm	dry cond.	14 12
Comparative tracking index	CTI	IEC 60112	-	cond.	150
Specific volume resistivity		IEC 60093	Ω · m	dry cond.	$<=10^6$ $<=10^6$
Specific surface resistivity		IEC 60093	Ω	cond.	$<=10^6$

General Properties

Density		ISO 1183	g/cm³	dry	1.04
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	%	-	0.6

Product-nomenclature: ISO 16396-PA12-P,,EHZ,C24-005

Processing information for the extrusion of Grilamid L XE 10953 BLACK

This technical data sheet for Grilamid L XE 10953 BLACK provides you with useful information on material preparation, machine requirements, tooling and processing.

MATERIAL PREPARATION

Grilamid L XE 10953 BLACK 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 period of time of at least 1 year, when stored in 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 XE 10953 BLACK 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 with a suitable dryer for materials containing plasticizers.:

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 effects of oxidation at temperatures above 80°C in the presence of oxygen. 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 L XE 10953 BLACK 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:	2.0:1 - 3.5:1

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's 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 XE 10953 BLACK, the following basic settings are recommended:

Temperatures

Hopper zone	60 - 90°C
Feeding zone	200 - 210°C
Compression zone	210 - 220°C
Metering zone	210 - 220°C
Head	210 - 220°C
Nozzle	210 - 220°C
Melt	210 - 220°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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Generated / updated: CVH / 10.2016

This version replaces all previous product specific data sheets.

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