TECHNICAL DATA SHEET

GRILON BR 40 W

General product description

Grilon BR 40 W is a medium viscosity, plasticized PA6 extrusion grade.

Grilon BR 40 W has the following important properties:

- High flexibility
- High stiffness

Grilon BR 40 W is used typically for extrusion applications such as flexible tubes.

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EMS

PROPERTIES

Mechanical Properties

		Standard	Unit	State	Grilon BR 40 W
Tensile E-Modulus	1 mm/min	ISO 527	MPa	dry cond.	1300 500
Tensile strength at yield	50 mm/min	ISO 527	MPa	dry cond.	40 30
Elongation at yield	50 mm/min	ISO 527	%	dry cond.	35 40
Tensile strength at break	50 mm/min	ISO 527	MPa	dry cond.	* *
Elongation at break	50 mm/min	ISO 527	%	dry cond.	> 50 > 50
Impact strength	Charpy, 23°C	ISO 179/2-1eU	kJ/m^2	dry cond.	no break no break
Impact strength	Charpy, -30°C	ISO 179/2-1eU	kJ/m^2	dry cond.	no break no break
Notched impact strength	Charpy, 23°C	ISO 179/2-1eA	kJ/m^2	dry cond.	15 no break
Notched impact strength	Charpy, -30°C	ISO 179/2-1eA	kJ/m^2	dry cond.	3 3
Ball indentation hardness		ISO 2039-1	MPa	dry cond.	55 30

Thermal Properties

Melting point	DSC	ISO 11357	°C	dry	220
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	110
Thermal expansion coefficient long.	23-55°C	ISO 11359	$10^{-4}/K$	dry	1.1
Thermal expansion coefficient trans.	23-55°C	ISO 11359	$10^{-4}/K$	dry	1.6
Maximum usage temperature	long term	ISO 2578	°C	dry	70 - 90
Maximum usage temperature	short term	ISO 2578	°C	dry	160

Electrical Properties

Dielectric strength		IEC 60243-1	kV/mm	dry cond.	26 22
Comparative tracking index	CTI	IEC 60112	-	cond.	450
Specific volume resistivity		IEC 60093	$\Omega \cdot m$	dry cond.	10^{11} 10^{10}
Specific surface resistivity		IEC 60093	Ω	cond.	10^{10}

General Properties

Density		ISO 1183	g/cm^3	dry	1.12
Flammability (UL94)	0.8 mm	ISO 1210	rating	-	HB
Water absorption	23°C/sat.	ISO 62	%	-	8
Moisture absorption	23°C/50% r.h.	ISO 62	%	-	2.5
Linear mould shrinkage	long.	ISO 294	%	dry	-
Linear mould shrinkage	trans.	ISO 294	%	dry	-

Product-nomenclature acc. ISO 1874: PA6-P, E, 24-010

Processing information for the extrusion of Grilon BR 40 W

This technical data sheet for Grilon BR 40 W provides you with useful information on material preparation, machine requirements, and processing.

MATERIAL PREPARATION

Grilon BR 40 W is delivered dry and ready for processing in sealed, air tight packaging. Predrying 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
Grilon BR 40 W 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 lead to a reduction of optical and mechanical properties.

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 affected by 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 colours only !) as a comparison sample.

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

MACHINE REQUIREMENTS

Grilon BR 40 W 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 its depth should not exceed 0.5 mm.

PROCESSING

Basic machine settings
In order to start up the machine for processing Grilon BR 40 W, the following basic settings can be recommended:

Temperatures

Hopper zone	40 - 80°C
Feeding zone	220°C
Compression zone	230°C
Metering zone	230°C
Head	230°C
Nozzle	220°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

For further details concerning extrusion please refer to our Technical Information Booklet “Tube Extrusion” available from your EMS-GRIVORY specialist.

We are happy to advise you. Simply call one of our sales offices.

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