

## TECHNICAL DATA SHEET

### GRILON BM 13 SBGX

#### General product description

Grilon BM 13 SBGX is an extracted, medium viscosity multi-polyamide with a low melting point.

This product has the following features

- Very high flexibility and toughness
- Very good thermoforming and orientation properties
- High shrinkage
- Very good transparency
- Low melting point (130°C)

#### Application

Grilon BM 13 SBGX is specially developed for manufacturing of both flat and blown coextruded films with temperature sensitive polymers such as PVDC and EVOH.

Grilon BM 13 SBGX is suitable for the following applications:

Flexible packaging for foodstuffs such as (shrinkable) film for consumer packaging of meat, cheese, sausage and fish.

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## PROPERTIES

### Thermal Properties

		Standard	Unit	Grilon BM 13 SBGX
Melting point	DSC	ISO 11357	°C	130
Melt volume rate (MVR)	275°C / 5 kg	ISO 1133	cm <sup>3</sup> /10 min	50

### General Properties

Density		ISO 1183	g/cm <sup>3</sup>	1.09
Water absorption	23°C/sat.	ISO 62	%	10
Moisture absorption	23°C/50 % RH	ISO 62	%	3
Shrink <sup>1)</sup>		EMS	%	40
Gloss	60°	ISO 2813	-	130
Haze		ISO 14782	%	--

### Barrier Properties (50 µm films)

O <sub>2</sub> -Transmission rate	23°C/ 0 % RH	DIS/ISO 15105-1	cm <sup>3</sup> /m <sup>2</sup> 24h bar	50
	23°C/85 % RH		cm <sup>3</sup> /m <sup>2</sup> 24h bar	100
CO <sub>2</sub> -Transmission rate	23°C/ 0 % RH	DIS/ISO 15105-2	cm <sup>3</sup> /m <sup>2</sup> 24h bar	130
	23°C/85 % RH		cm <sup>3</sup> /m <sup>2</sup> 24h bar	500
Moisture vapour transmission rate	23°C/85 % RH	DIS/ISO 15106-1	g/m <sup>2</sup> 24h	15

### Mechanical Properties

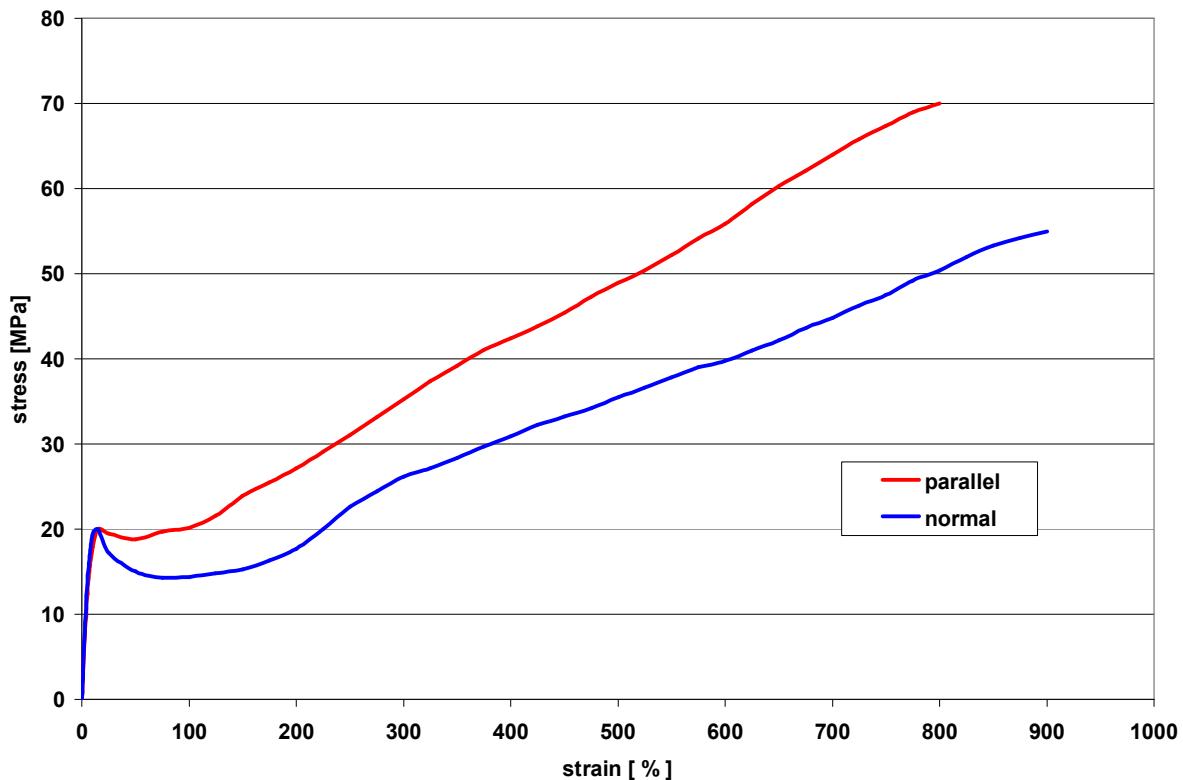
Tensile E-Modulus		ISO 527-2	MPa	300
Stress at yield	parallel normal	ISO 527-3	MPa	25 20
Strain at yield	parallel normal	ISO 527-3	%	20 10
Stress at break	parallel normal	ISO 527-3	MPa	80 60
Strain at break	parallel normal	ISO 527-3	%	700 900
Tear resistance	parallel normal	ISO 6383-1	N/mm	60 60
Elmendorf tear resistance	parallel normal	ISO 6383-2	N	80 80
Dart drop impact	A B	ISO 7765-1	g	-- --
Gelboflextest	900 cycles	EMS	holes/ m <sup>2</sup>	600

Product nomenclature acc. ISO 1874: PA 6/69, FT, 18-007

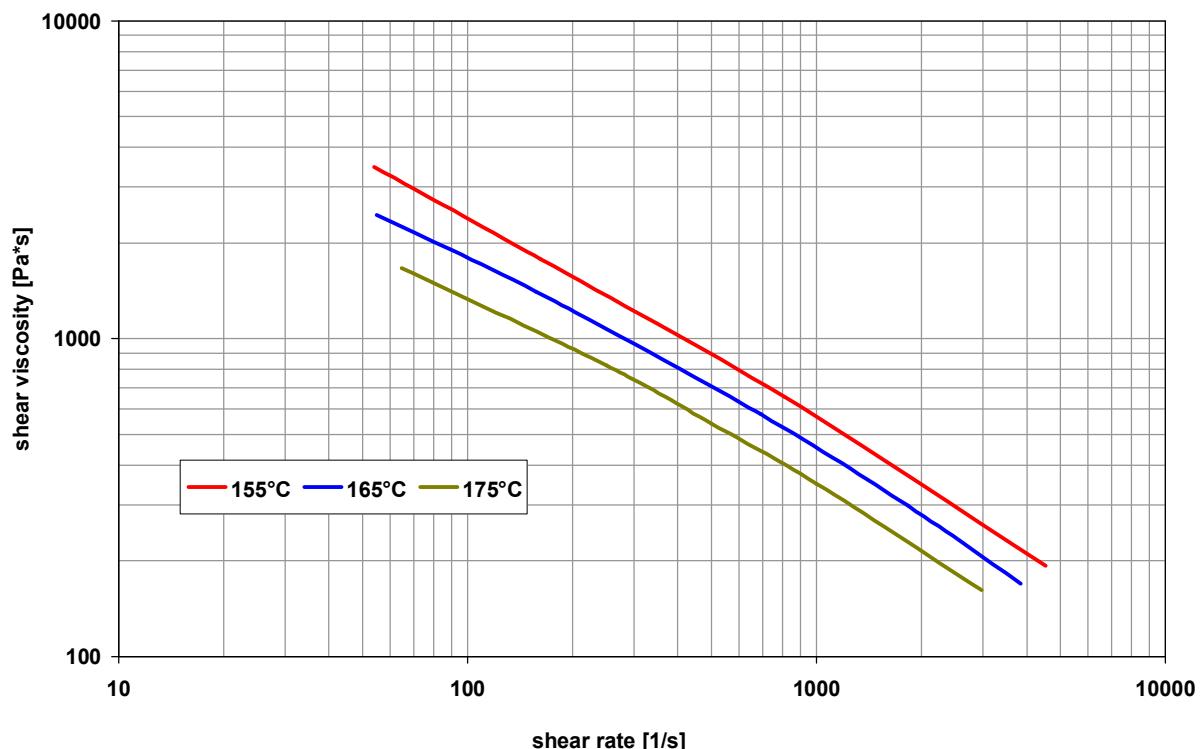
<sup>1)</sup> 80 µm film applied on 160 µm ionomer, biaxially oriented at 70°C (draw ratio 2:1), afterwards shrinkage in water at 85°C



## Stress & Strain Grilon BM 13 SBGX



## Viscosity function Grilon BM 13 SBGX



# Processing information for the extrusion of Grilon BM 13 SBGX

This technical data sheet for Grilon BM 13 SBGX provides you with useful information on material preparation, machine requirements and processing.

## MATERIAL PREPARATION

Grilon BM 13 SBGX is delivered dry and ready for processing in sealed, air tight packaging. Predrying is not necessary.

### 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 BM 13 SBGX is dried and packed with a moisture content of less than 0.10 %. The processing of moist material reduces the optical and mechanical quality of the application. A too high moisture content can result in fish eyes, streaks and brittleness.

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 time

If there is only slight evidence of foaming of the melt or just traces of silver streaks on the part, then the above mentioned minimal drying time will be sufficient. Material, which is stored in open over days, which shows strong foaming, is unusually easy flowing melt or streaks on the article, then the maximal drying time is required.

### Drying temperature

Polyamides are subjected to the affects of oxidation at temperatures above 80°C in the presence of oxygen. Visible yellowing of the material is an indicator of oxidation. Hence temperatures above 80°C or desiccant dryers and temperatures above 100°C or vacuum ovens should be avoided.

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

## MACHINE REQUIREMENTS

Grilon BM 13 SBGX can be processed economically and without problems on all extrusion lines suitable for polyamides.

### Screw

Wear protected, Universal 3 zone screws are recommended.

#### Screw

Length:	24 D - 30 D
Compression ration:	2.5 - 3.5

### Heating

At least three separately controllable heating zones, capable of reaching cylinder temperatures of up to 270°C are recommended. The cylinder flange and adapter must be able to be heated.

## PROCESSING

### Temperatures

For the start up of processing Grilon BM 13 SBGX the following parameters can be recommended:

#### Temperatures

Hopper	15 - 60°C
Zone 1	150 - 170°C
Zone 2	160 - 180°C
Zone 3	160 - 180°C
Adapter	160 - 180°C
Mould	160 - 180°C
Die	160 - 180°C
Melt	160 - 180°C

In cases where the use of grooved feed zones is employed it is recommended to temper this zone between 60 and 120°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.

