

## **GRILON F 34 NL NAT. 6019**

### **Product description**

Grilon F 34 NL nat. 6019 is a medium viscosity PA 6 containing nucleation and lubrication suitable for the production of coex blown films and mono or coex cast films.

Grilon F 34 NL nat. 6019 has been developed for flexible film applications.

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**EMS**

## GENERAL PROPERTIES

### Mechanical Properties<sup>1)</sup>

		Standard	Unit	Grilon F 34 NL nat. 6019
Tensile E-Modulus	1 mm/min	ISO 527	MPa	700
Tensile strength at yield	100 mm/min	ISO 1184	MPa	35
Elongation at yield	100 mm/min	ISO 1184	%	9
Tensile strength at break	100 mm/min	ISO 1184	MPa	100
Elongation at break	100 mm/min	ISO 1184	%	600
Tear propagation resistance	100 mm/min	DIN 53363	N/mm	500
Impact penetration energy	4.5 m/s	ISO 6603	Nm	4
Damaging Force	4.5 m/s	ISO 6603	N	200
Damaging deformation	4.5 m/s	ISO 6603	mm	30
Gelbo flex test	900 cycles	EMS	holes/m <sup>2</sup>	700

### Thermal Properties

Melting point	DSC	ISO 11357	°C	220
Melt volume index (MVI)	275°C/5 kg	ISO 1133	ml/10 min	approx. 40

### Behaviour towards external influences / General Properties

Density		ISO 1183	g/cm <sup>3</sup>	1.14
Water absorption	23°C/sat.	ISO 62	%	~9
Moisture absorption	23°C/50 % r.h.	ISO 62	%	2 - 3
Gloss	60°C	DIN 67530	--	100
Shrinkage		EMS	%	--

### Barrier Properties (50 µm films)

O <sub>2</sub> -Transmission rate	23°C/ 0 % r.h.	ASTM D 3985	cm <sup>3</sup> /m <sup>2</sup> d bar	25
	23°C/85 % r.h.	ASTM D 3985	cm <sup>3</sup> /m <sup>2</sup> d bar	70
CO <sub>2</sub> -Transmission rate	23°C/ 0 % r.h.	EMS	cm <sup>3</sup> /m <sup>2</sup> d bar	80
	23°C/85 % r.h.	EMS	cm <sup>3</sup> /m <sup>2</sup> d bar	250
N <sub>2</sub> -Transmission rate	23°C/ 0 % r.h.	DIN 53380	cm <sup>3</sup> /m <sup>2</sup> d bar	10
Moisture vapour transmission rate	23°C/85 % r.h.	DIN 53122	g/m <sup>2</sup> d	20

Product nomenclature acc. ISO 1874-1: PA 6, FR, 22-030
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<sup>1)</sup> Tensile E-modulus measured on conditioned ISO 3167 test bars. All other measurements carried out on 50 µm film

## Processing information for the extrusion of Grilon F 34 NL nat. 6019

This technical data sheet for Grilon F 34 NL nat. 6019 provides you with useful information on material preparation, machine requirements and processing.

### MATERIAL PREPARATION

Grilon F 34 NL nat. 6019 is delivered dry and ready for processing in sealed, air tight packaging. Pre-drying 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

During its manufacturing process Grilon F 34 NL nat. 6019 is dried and packed with a moisture content of less than 0.07 %. 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 only low foaming and slight silver streaks are noticeable, the above mentioned minimal drying time will be sufficient. Material, which is stored open over days, which shows strong foaming, unusually easy flowability and streaks, 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 indication of oxidation. Hence 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

Grilon F 34 NL nat. 6019 can be processed economically and problem-free on all machines 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 up to 270°C are required. The cylinder flange and adapter must be able to be heated.

### PROCESSING

#### Temperatures

For the start up of processing Grilon F 34 NL nat. 6019 the following parameters have been found to be satisfactory:

##### Temperatures

Hopper	lightly cooled
Zone 1	240°C
Zone 2	245°C
Zone 3	250°C
Adapter	250°C
Mould	250°C
Die	250°C
Melt	250°C

With the use of grooved feed zones it is recommended to temper this zone between 160 and 180°C.

### CUSTOMER SERVICES

EMS-Grivory is a specialist for polyamide synthesis and polyamide-processing. Our customer services are not only concerned with the manufacturing and supply of engineering thermoplastics but also provides a full technical support program:

- Rheological design calculation / FEA
- Prototype tooling
- Material selection
- Processing support
- Mould and component design

We are happy to advice 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.

代理商: 上海惠威新材料有限公司 电话: 159 2119 9587  
网址: <http://www.hwgcsl.com/>