EPLAMID 66 GFI 15 NC Q1B5A801

Polyamide 66

Technical Data Sheet

Material Information: Reinforced with 15% of glass fiber and modified polyamide 66, with improved impact resistance, heat stabilized for injection moulding.

Notes: Eplamid 66 glass fiber and impact modified grades are used in all sectors of industry, offering a good impact strength for mechanical properties and ensures an outstanding performance even at low temperatures (up to -40°C). This material is available in natural and colours on request.

Properties	Test Method	Unit	Value	
Physical properties			**Dry**	**Cond**
Density (23°C)	ISO 1183	g/cm^3	1,20	
Ash content	ISO 3451-4	%	15	
Determination of water content	ISO 15512	%	0,1	
Mold shrinkage- parallel/normal (3mm)	ISO 294-4	%	0,8/0,9	
Mechanical properties				
Tensile modulus (1mm/min) (23°C)	ISO 527-2	MPa	5200	3100
Tensile stress at break (5mm/min) (23°C)	ISO 527-2	MPa	115	75
Tensile strain at break (5mm/min) (23°C)	ISO 527-2	%	5	10
Flexural modulus (2mm/min) (23°C)	ISO 178	MPa	4200	2800
Flexural strength (2mm/min) (23°C)	ISO 178	MPa	145	95
Notched izod impact (23°C)	ISO 180/1A	kJ/m²	15	17
Unnotched izod impact (23°C)	ISO 180/1U	kJ/m²	73	83
Notched charpy impact (23°C)	ISO 179/1eA	kJ/m²	17	19
Unnotched charpy impact (23°C)	ISO 179/1eU	kJ/m²	83	93
Notched izod impact (-40°C)	ISO 180/1A	kJ/m²	7	
Notched charpy impact (-30°C)	ISO 179/1eA	kJ/m²	8	
Thermal properties				
Melting point	ISO 3146	°C	260	
Temp. of deflection under load (0,45 MPa)	ISO 75-2/B	°C	240	
Temp. of deflection under load (1,80 MPa)	ISO 75-2/A	°C	235	
Flammability & electrical properties				
Flammability classification (0,8mm) - UL 94	EN 60695-11-10	-	HB	
Comparative tracking index - CTI (Solution A)	EN 60112	V	600	
Surface resistivity	ASTM D257	Ω/sq	1,00E+14	

Test conditions

Laboratory conditions are 23 ±2°C and 45-55 % RH.

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EPLAMID 66 GRADES PROCESSING CONDITIONS

Injection moulding of EPLAMID 66

Polyamide 66 is easy to mould material, which is not particularly sensitive to moulding conditions.
A few general guidelines are given here.

Pre-drying

Polyamide is hygroscopic and moisture sensitive, so pre-drying is recommended as a matter of rule. Material that is not pre-dried to a moisture level below 0,1 % will degrade, causing surface defects, parts that are out of dimension and brittle parts. It is recommended to dry material for 4 hours at 80°C to 85°C in a desiccant dryer with more than one desiccant element.

A few tips to ensure proper operation of the dryer:

* Ensure the thermocouple that regulates the temperature is placed immediately before the entry of the air into the dryer. There can be a significant temperature drop in the air-conveyance system.

* The temperature of the air going out of the dryer silo should not be more than 30°C lower than the air entering the system. If this is the case, you have insufficient air capacity.

* From time to time, monitor the dew point of the dry air to ensure the desiccant elements are functioning properly.

* Often, less air runs through the very bottom part of a dryer silo. Therefore, it is recommended that you take the material out of the bottom of the dryer and feed back into the top when you start up your process.

Moulding temperatures

For polyamide 66, the melt temperature must be kept below 300°C. Any higher temperature will cause rapid degradation, which can be recognized by foaming of the material or splash marks on the surface of the part.

The following barrel settings are recommended:

Material	Zone 1 (Hopper)	Zone 2	Zone 3	Zone 4 (Nozzle)
Impact M. Grades	260-275°C	260-280°C	270-280°C	275-285°C
Flame Ret. Grades	260-280°C	260-280°C	270-280°C	275-285°C
Unfilled Grades	260-295°C	270-295°C	275-290°C	275-295°C
Reinforced Grades	270-290°C	270-295°C	270-295°C	275-295°C

Tool temperature

Mould temperature is always a compromise. Moreover, tool temperature should be as a high as possible to give optimum crystallization, dimensional, good surface finish and excellent mechanical performance. On the other hand, lower tool temperature can significantly cut cycle time.
For Polyamide 66, 80°C should be maintained as a minimum. For reinforced grades values of 90-110°C are preferred.

Pressure and speed

Injection pressure should generally be around 70 to 120 Mpa; this results in a minimum clamping force of the moulding machine in tonnes of 0,7 times the projected surface area in cm^2.

Holding pressure is generally in the area of 90 Mpa.

For glassfibre reinforced compounds, the screw speed should be kept low, a rough indication is as follows:

Screw diameter (mm)	Maximum rpm
20	150
30	100
40	70
50	60
60	50
70	40
80	35
>80	30

Back pressure should be kept to a practical minimum.

Use of regrind

Regrind sprues and runners can be used on most materials. It is not recommended to use regrind on FR grades. When regrind is used, observe these simple rules:

* Use a constant ratio of regrind and virgin material. When a material has been processed once, its viscosity and fibre length have been decreased. Using varying rations of regrind can lead to variations in dimensions, mechanical performance and processing characteristics.

* Either feed the regrind straight back into the machine or pre-dry the regrind before usage.

* Store regrind in a dry, clean place to avoid contamination and excess moisture.

* Ensure sharp cutting blades to keep dust generation to a minimum; cut glass fibre reinforced material when it is still hot.

* Clean the grinder regularly to avoid build up of dust.

* Do not use splayed, discoloured or degraded parts and runners.