

## Nylon 12.

Nylon materials are macromolecular, semi-crystalline thermoplastics with high impact resistance. The difference between the various types are achieved through the composition and structure of the molecular chains and using special additives. Nylon has relatively high moisture absorption. Tensile and compressive strengths vary by type. Nylon 12 has increased impact resistance, lower moisture absorption and improved chemical resistance.

### Physical Properties (indicative values)

GENERAL PROPERTIES	Test Method	Units	Value
Density	ISO 1183	g/cm <sup>3</sup>	1.02
Water absorption			
- at saturation in air of 23°C / 50% R.H.	ISO 62	%	0.8
- at saturation in water 23°C	ISO 62	%	2
MECHANICAL PROPERTIES			
Tensile stress at yield and break	ISO 527	N/mm <sup>2</sup>	50
Elongation at break	ISO 527	%	200
Tensile modulus of elasticity	ISO 527	N/mm <sup>2</sup>	1800
Compression test			
- 1% strain after 1,000 hrs	ISO 899	N/mm <sup>2</sup>	
Charpy impact strength - Notched	ISO 179-1/1eU	KJ/mm <sup>2</sup>	20
Charpy impact strength - Unnotched	ISO 179-1/1eA	KJ/mm <sup>2</sup>	no break
Ball indentation hardness	ISO 2039	N/mm <sup>2</sup>	100
Shore hardness D	ISO 2039	D	78
Coefficient of friction to steel <sup>(12)</sup>	ISO 8295	-	0.36
THERMAL PROPERTIES			
Melting temperature	ISO 3156	°C	178
Thermal conductivity at 23°C	ISO 22007.2	W/(km)	0.3
Deformation temperature <sup>(15)</sup>	ISO 75	°C	50
Coefficient of linear thermal expansion			
- average value between 23 and 60°C	ISO 11359	m(m.K)	100
Max. allowable service temperature in air			
- Continuously <sup>(17)</sup>	-	°C	65
- Short periods <sup>(18)</sup>	-	°C	140
Minimum service temperature <sup>(19)</sup>	-	°C	
Flamability			
- Oxygen index	ISO 4589	%	22
- according to UL 94 (3/6 thickness)	UL94	-	HB
ELECTRICAL PROPERTIES			
Dielctrical constant	ISO 250	-	3.8
Dielectric strength	ISO 243	KV/mm	26
Volume resistivity	ISO 93	Ωcm	10 <sup>15</sup>
Dissipation factor tan Δ at 1 MHz	ISO 250	-	3.8

### Legend

- Figures relate to specimen conditioned at 23°C and 50 RH. Figures between brackets relate to dry specimen. Figures for materials marked with \* can change according to their moisture content.

- Figures refer to un-coloured samples either injection moulded or machined in the easiest way. Tests made on samples of different sizes give slightly different results.

<sup>(12)</sup> Test on ground steel dry specimen load 0.05 N/mm<sup>2</sup> speed =0.6 m/s

<sup>(15)</sup> Deformation at temperature . HDT at 1.8 N/mm<sup>2</sup>

<sup>(17)</sup> Operating temperature continuously 5000h. From 23°C upwards, the materials' features change in a non-uniform and disproportional way. The quoted limits are indicative and based on a tensile stress of 50% of the value at 23°C.

<sup>(18)</sup> Operating temperature short period (no load).

<sup>(19)</sup> The mechanical features decrease with a reduction in temperature and are also influenced by other factors (moisture, etc). The quoted values do not take into consideration impact conditions or heavy loads.

This table, is mainly to be used for comparison purposes. It's a valuable tool to help in the choice of material. The data listed here falls within the normal range of product properties. However, they aren't guaranteed and shouldn't be used to establish material specification limits nor used alone as the basis of design.

This product data sheet and any data or specifications presented on our website shall provide promotional and general information about Plastim Limited Products and shall serve as a preliminary guide. All data and descriptions relating to our products are of an indicative nature only. Neither this data sheet nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation.

It solely remains the customers responsibility to test and assess the suitability and compatibility of Plastim's Products for it's intended applications, processes and uses. The customer undertakes all liability in respect of the applicaion, processing or use of the aforementioned information or product .