



## Product information

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### Product full identity:

#### Cast Polyamide 6

Cast Nylon 6 has improved characteristics over the extruded alternative. Offering higher strength, stiffness, hardness and an improved operating temperature of 0°C to +90°C. Cast Nylon 6 range of materials are food compliant.

### Properties

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- » Not as stressed as ext nylon
- » Better than ext nylons when machining
- » Similar characteristics to ext nylon 6.6
- » Good creep and wear resistance
- » High strength
- » Available in larger sizes

### Applications

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- » Large gears
- » Bearings
- » Bushes
- » Gear racks
- » Crane sheaves
- » Boom pads

### This document contains

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- » Technical Datasheet (Page 2)
- » Chemical Datasheet (Page 3)
- » Safety Datasheet (Pages 4-5)

For any further information regarding food, fire and water certificates then please contact the sales team on 0114 256 0889

## Technical Properties

Physical Properties	Test	Unit	Result
1. Specific gravity	ISO 1183-1	g/cm <sup>3</sup>	1.15
2. Water absorption till saturation 23°C	-	%	6.5
3. Maximum service temp. Upper temp limit (no stronger mechanical stress involved)	-	°C	170
Long term	-	°C	105
Lower temp limit	-	°C	-30
Mechanical Properties	Test	Unit	Result
1. Tensile strength at yield	ISO 527-1/-2	MPa	86/-
2. Elongation at yield	-	%	-
4. Tensile strength at break	ISO 527-1/-2	MPa	25
5. Unnotched Impact strength	ISO 179-1/1eU	kJ/m <sup>2</sup>	3
6. Notch impact strength	ISO 179-1/1eA	kJ/m <sup>2</sup>	165 / M88
7. Ball indentation / Rockwell hardness	ISO 2039-1/-2	MPa	-
8. Shore-D	-	-	-
9. Flexural modulus of elasticity	-	MPa	3600
10. Tensile modulus of elasticity	ISO 527-1/-2	MPa	
Thermal Properties	Test Method	Unit	Result
1. Vicat-softening point VST/B/50	-	°C	-
2. Heat deflection temperature HDT/B	ISO 75-1/-2	°C	80
3. Coefficient of linear thermal expansion 23°C - 100°C	-	W/(m*K)	90 x 10 <sup>-6</sup>
4. Thermal conductivity at 23°C	-	W/(m*K)	0.29
Electrical Properties	Test Method	Unit	Result
1. Volume resistivity	IEC 6093	Ω x m	>10 <sup>14</sup>
2. Surface resistivity	IEC 6093	Ω	>10 <sup>13</sup>
3. Dielectric constant at 1MHz	-	-	-
4. Dielectric loss factor at 1 MHz	IEC 60250	10 <sup>6</sup> Hz	0.016
5. Dielectric strength	IEC 60243-1	kV/mm	25
6. Comparative tracking index (CTI)	IEC 60112	-	600
Additional Data	Test Method	Unit	Result
1. Bondability	-	-	-
2. Food compliance	FDA	-	+
3. Flammability	UL 94	-	HB

All The above information is for guide purposes only. The data has been taken from standard test results provided by our manufacturers.

### Key:

Yes	Limited	No data
+	0	-

## Chemical Properties

Agent	Conc %	Working Temp		Agent	Conc %	Working	Temp
		20°C	60°C				
Acetic Acid	100	-	-	Hydrofluoric acid	40	-	-
Acetone	100	o	o	Hydrogen peroxide	10	+/o	-
Ammonia	Conc.	+/o	-	Hydrogen Sulphide		+	
Ammonium chloride		+		Isopropyl Alcohol	100	+	+
Amyl Alcohol		+		Mercurochrome		-	-
Benzene		+	+	Methyl alcohol	100	+	
Bleaching Solution	12,5 Cl	-	-	Methyl ethyl ketone	100	+	
Boric Acid	100	+/o	o	Methylene chloride	100	o	o
Brake Fluid		+	+	Nitric acid	10	-	-
Butyl Acetate		+		Nitric acid	50	o	
Calcium Chloride		+	+	Nitrobenzine		o	
Carbon disulphide	100	+	-	Oxalic Acid		-	-
Carbon Tetrachloride		+		Ozone, gas	ca. 0,5 ppm	+	+
Chlorine, gas	100	-		Paraffin Oil	100	o	-
Chlorobenzene	100	+		Perchlorethylene		+	
Chloroform		-	-	Petroleum	100		
Citric Acid	10	+		Petroleum, aromatic free	100	-	-
Cresol		-	-	Phenol, aqu	ca.9	-	-
Cyclohexanone	100	+		Phosphoric Acid	50	o	+
Cyclohexene	100	+	+	Potassium hydroxide liquor	50		
Diesel Fuel		+	+	Propyl alcohol		+	o
Ethyl acetate	100	+		Pyridine		+	+
Ethyl alcohol	96	+	+	Silicone oil		+	+
Ethylene Chloride	100	+		Sodium carbonate, aqu		+	+
Formic Acid	10	-	-	Sodium chloride, aqu		+	
Frost protection agent		+	+	Sodium Hydroxide liquor	60	o	
Fuel, aromatic free		+	+	Sodium hydrogen sulphite		+	
Glycerine	100	+	+	Sodium nitrate, aqu		+	
Glycol	100	+	o	Sodium thiosulfate			
Heating oil		+	+	Sulphuric Acid	96	-	-
Heptane	100	-	-	Tetrahydrofuran	100	+	
Hydrochloric acid	10	-	-	Toluene	100	+	+
Hydrochloric acid	conc.	-	-	Trichlorethylene	100	-	-
				Xylene		-	-

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### Key:

Yes	Limited	No data
+	o	-

## Safety Properties

### Substance / preparation and company detail

Polycaprolactam  
Direct Plastics Limited  
Rother Valley Way,  
Holbrook,  
Sheffield,  
S20 3RW  
0114 2560889

### Composition / indications to components

**Contains:**

Caprolactam -CAS No. 105-60-2

This product is not expected to be hazardous to health as defined by the EC Dangerous Substance/Preparations Directives.

### Possible dangers

**Effects of overexposure:** Contact with hot material may cause skin burns.

Hazardous decomposition products – refer to section 5

Un-reacted chemicals may be exposed during machining:

R20/22 – Harmful by inhalation and if swallowed;

R36/37/38 – Irritating to eyes, respiratory system and skin.

### First-aid measures

**Eye contact:** Like any foreign object can cause irritation to the eye, Wash thoroughly with clean water and if symptoms persist, seek medical advice. Monomers vapour from heated product can cause irritation. Wash affected eyes for at least 15 for minutes under running water with eyelids open, consult an eye specialist.

**Skin contact:** Monomers vapour from heated product can cause irritation. Wash thoroughly with soap and water.

**Inhalation:** Monomers vapour from heated product can cause irritation. Keep patient calm, remove to fresh air and summon medical help.

**Ingestion:** If swallowed, obtain medical attention.

### First-fighting measures

**Extinguisher type:**

Foam, Water, Water Spray, Dry Chemical and Carbon Dioxide.

**Special protective equipment:** For fires in enclosed areas, fire-fighters must use self-contained breathing apparatus. May generate irritating vapours when burning. Collect separately contaminated extinguishing water; do not allow to reach sewerage or effluent system.

**Hazardous decomposition products:** Incomplete combustion results in formation of toxic vapour, containing mainly carbon monoxide and carbon dioxide. In addition small quantities of the following substances can be formed; nitrogen oxides, hydrogen cyanide.

### Measures in case of unintended release

**General:** Avoid obstacle hazard by removing released material. Take care to avoid unstable stacks.

**Methods for cleaning up:** Sweep/shovel up.

### Handing and storage

**Handling:** No special precautions are necessary beyond normal good hygiene practices. See section 8 for additional personal protection advice when handling this product.

**Storage:** No special precautions are necessary beyond normal good working practices.

## Safety Properties

### Limitation of exposition

**Ventilation:** Use local exhaust ventilation over machining operations.

**Respiratory protection:** No special requirements under ordinary conditions of use with adequate ventilation.

**Eye protection:** Generally eye contact with solid material is unlikely. However in machining areas adequate eye protection should be worn.

**Skin protection:** Gloves suitable to resist abrasion and cutting should be worn. Good personal hygiene practices should always be followed.

### Physical and chemical characteristics

Typical physical properties are given below. Consult Product Data Sheet for specific details.

**Physical state:** Solid

**Colour:**

**Odour:** Mild

**Melting point:** >200°C

**PH:** NA

**Explosive properties:** NA

**Relative density:** 1.13 - 1.15 g/cm<sup>3</sup>

**Solubility in water:** Insoluble

### Stability and reactivity

**Thermal decomposition:** Thermal decomposition begins at temperatures above melting point. See section 5 for hazardous decomposition products.

**Hazardous reactions:** Material is resistant to many chemicals. Chemical resistance can be obtained with technical data for the material.

### Toxic information

No toxic – see section 5 for hazardous decomposition products.

### Ecological information

Environmental rate and effects not established

### Waste-disposal information

**Waste from residues:** Dispose in accordance with local and national regulations.

The material can be recycled by extrusion process into pellets for further processing.

**Waste from packing:** Dispose in accordance with local and national regulations.

### Transport information

Not classified as hazardous under transport regulations.

### Regulations

The product is expected to be in compliance with the inventory listing requirements of the US Toxic Substances Control Act (TSCA)

Chemical Substance Inventory.

### Further information

The information is based on our current knowledge. They are meant to describe our products in respect to safety requirements. They do not represent any guarantee of the described product in the sense of the legal guarantee regulations.