

# PA 6E

Extruded Polyamides

## Extruded Polyamides (PA E)

Polyamides, commonly referred to as nylons, are macromolecular, partially crystalline thermoplastics. Their physical properties are mainly determined by the composition and structure of their molecular chains. Nylacast produce and modify PA 6, PA 66 and PA 12. Their combined strengths and characteristics position them as obvious first choice materials for all components, subject to structural and wear conditions, in mechanical and plant engineering environments.

**Key characteristics:**

- Excellent sliding and wear properties
- Perfect balance of mechanical strength, toughness and rigidity
- Good electrical insulating properties
- Various FDA compliant grades available

Standard extruded Polyamide (Nylon) grades:

### 6E (PA 6E)

This general-purpose grade offers an excellent blend of mechanical and impact strength, vibration damping and wear resistance. Complementing these properties are good electrical insulation and favourable chemical resistance.

NATURAL, BLACK

### 6CC (PA 6CC)

This polymer was designed and developed exclusively by Nylacast to offer an extruded version of their world renowned lubricated cast nylons. The compound incorporates a uniformly dispersed solid lubricant, demonstrating improved frictional properties and wear resistance while retaining excellent impact strength and damping capacity.

BLACK

### 66E (PA 66E)

This grade is noted for its elevated mechanical strength, rigidity, abrasion and heat resistance. Its impact strength and vibration damping abilities are reduced when compared to PA 6, making this the preferred extruded grade for highly stressed, thermally loaded components.

NATURAL, BLACK

### MOLY (PA 66E + MoS<sub>2</sub>)

The altered crystalline structure created by the nucleating effect of the molybdenum disulphide improves the dimensional stability of this modified PA 66. Improved rigidity enhances the material's bearing and wear resistance properties.

BLACK

### 12E (PA 12E)

This lightweight product is a homopolymer of laurilactam. It exhibits greater dimensional stability and superior insulating properties due to its low moisture absorption. It also demonstrates improved thermal stability and better chemical resistance when compared to PA 6.

NATURAL, BLACK

## Standard Extruded PA 6E RODS Standard Extruded PA 6E PLATES

DIAMETER Ø		TOLERANCE <sup>1</sup> on the diameter	THICKNESS		TOLERANCE <sup>1</sup> on the thickness
(mm)	(inches)	(mm)	(mm)	(inches)	(mm)
5	3/16	+0.1 +0.4	6.35	1/4	+0.2 +0.9
6	1/4		8	5/16	
			10	3/8	
8	5/16	+0.1 +0.5	12	7/16	+0.3 +1.5
10	3/8		12.7	1/2	
12	7/16	+0.2 +0.7	15		
12.7	1/2		16	5/8	
14	9/16		18		
15			20	3/4	
16	5/8		22	7/8	
18			25	1	
20	3/4		28	1 1/8	+0.5 +2.5
22	7/8	+0.2 +0.9	30		
25	1		32	1 1/4	
28	1 1/8		35	1 3/8	
30			38	1 1/2	
			40		
32	1 1/4	+0.2 +1.1	45	1 3/4	
35	1 3/8		50	1 7/8	
38	1 1/2		50.8	2	
40			57	2 1/4	+0.5 +3.5
45	1 3/4	+0.3 +1.3	60	2 3/8	
50	1 7/8		65	2 1/2	
50.8	2		70	2 3/4	
55	2 1/8		76.2	3	
57	2 1/4		80		+0.5 +5.0
			85	3 1/4	
60	2 3/8	+0.3 +1.6	90	3 1/2	
65	2 1/2		95	3 3/4	
70	2 3/4		100		
75	2 7/8	+0.4 +2.0	101.6	4	
76.2	3		110	4 1/4	+1.0 +6.0
80			115	4 1/2	
85	3 1/4	+0.5 +2.2	120	4 3/4	
90	3 1/2				
95	3 3/4	+0.6 +2.5			
100					
101.6	4	+0.7 +3.0			
110	4 1/4				
115	4 1/2	+0.8 +3.5			
120	4 3/4				
125					
127	5				
130		+0.9 +3.8			
135	5 1/4				
140	5 1/2				
150	5 3/4	+1.0 +4.2			
152.4	6				
160	6 1/4	+1.1 +4.5			
165	6 1/2				
170	6 3/4	+1.2 +5.0			
180	7				
190	7 1/2	+1.3 +5.5			
200					
203.2	8				

## Leading the way in engineering plastic solutions

Nylacast has become synonymous with innovation, quality and technical excellence in relation to cast nylon development.

The integration between technology, materials and components has become a trademark for the company in providing our products to a global customer base.

This successful formula is now being applied to extruded general and advanced engineering plastics. As a result Nylacast are now a complete solution provider in the development, specification and production of a wide range of engineering polymers.

### Extruded Polyamide Grades (PA E)

- 6E (PA 6E)
- 6E MOLY (PA 6E + MoS<sub>2</sub>)
- 6CC (PA 6CC + WAX)
- 66E (PA 66E)
- 66E MOLY (PA 66E + MoS<sub>2</sub>)
- 12E (PA 12E)

### Glass Reinforced Extruded Polyamide Grades (PA E GF)

- 6E GF (PA 6E + 30% glass fibre)
- 6CC GF (PA 6CC + 30% glass fibre)
- 66E GF (PA 66E + 30% glass fibre)

### Cast Polyamide Grades (PA C)

- 6C (PA 6C)
- COLOURED 6C (PA 6C)
- MOLY (PA 6C + MoS<sub>2</sub>)
- H.S. BLUE (PA 6C + UV & heat stabilisers)
- OFN (PA 6C + oil)
- MOLY OFN (PA 6C + MoS<sub>2</sub> + oil)
- WFN (PA 6C + wax)
- AQUANYL (PA 612C copolymer)
- IMPACT (PA 6C + plasticizer)
- OILON (PA 6C + blended liquid lubricant)
- 12C (PA 12C)

### Nylube Grades (Modified PA 6C)

- NYLUBE (PA 6C + blended solid & liquid lubricant)
- NYLUBE FG (PA 6C + Nylube lubricant + FDA compliance)
- NYLUBE MQ (PA 6C + Nylube lubricant + MoS<sub>2</sub>)
- NYLUBE GF (PA 6C + Nylube lubricant + glass)
- SUPER NYLUBE (PA 6C + new lubrication system)

### Polyacetal Grades (POM)

- POM C (Acetal copolymer)
- POM CPE (POM C + PE)
- POM CGF (POM C + glass fibre)
- POM H (Acetal homopolymer (DuPont™ Delrin®))
- POM HT (POM H + Teflon® (DuPont™ Delrin® and Teflon®))

### Polyethylene Terephthalate Grades (PET)

- PET (Polyethylene Terephthalate)
- PET LL (PET + liquid lubricant)
- PET SL (PET + solid lubricant)

# PA GF

Glass Reinforced Polyamides



ENGINEERING PLASTIC SOLUTIONS

## Glass Reinforced Polyamides (PA GF)

Glass reinforced polyamides exhibit particularly high mechanical strength, rigidity, hardness and heat resistance. Creep resistance and dimensional stability improve, though (with the exception of NYLUBE GF) the surface stick/slip characteristics deteriorate.

Key characteristics:

- Excellent mechanical strength, rigidity and hardness
- Excellent thermal stability
- Very good creep and fatigue resistance
- High impact strength
- Good electrical insulating properties
- Reduced moisture absorption

Standard glass filled Polyamide (Nylon) grades:

### 6GF (PA 6E + 30% glass fibre)

This extrusion grade is reinforced with glass fibre to achieve greater strength, rigidity, creep resistance and dimensional stability. The material has excellent abrasion resistance and can be used at higher maximum service temperatures.

BLACK

### 6CCGF (PA 6CC + 30% glass fibre)

Similar to PA 6GF, CCGF is reinforced with glass fibre to achieve greater strength, rigidity, creep resistance and dimensional stability. The compound incorporates the same solid lubricant as PA 6CC giving the material exceptional abrasion resistance and again can be used at higher maximum service temperatures.

BLACK

### 66GF (PA 66E + 30% glass fibre)

This glass reinforced grade exhibits excellent mechanical strength, rigidity, and high creep and abrasion resistance. Moisture absorption is lower than 6GF, and will hold particularly good dimensional accuracy.

BLACK

- Standard Extruded Glass Filled POLYAMIDE RODS
- Standard Extruded Glass Filled POLYAMIDE PLATES

DIAMETER Ø		TOLERANCE <sup>1)</sup> on the diameter	THICKNESS		TOLERANCE <sup>1)</sup> on the thickness
(mm)	(inches)	(mm)	(mm)	(inches)	(mm)
8	5/16	+0.1 +0.5	10	3/8	+0.2 +0.9
10	3/8		12	7/16	+0.3 +1.5
12	7/16	+0.2 +0.7	12.7	1/2	
14	9/16		15		
15	5/8		16	5/8	
16	5/8		18		
18	3/4		20	3/4	
20	3/4		22	7/8	
			25	1	
22	7/8	+0.2 +0.9	28	1 1/8	+0.5 +2.5
25	1		30		
28	1 1/8		32	1 1/4	
30	1 1/4		35	1 3/8	
			38	1 1/2	
32	1 1/4	+0.2 +1.1	40		
35	1 3/8		45	1 3/4	
38	1 1/2		50	1 7/8	
40	1 1/2		50.8	2	
45	1 3/4	+0.3 +1.3	57	2 1/4	+0.5 +3.5
50	1 7/8		60	2 3/8	
50.8	2		65	2 1/2	
55	2 1/8		70	2 3/4	
57	2 1/4		76.2	3	
60	2 3/8	+0.3 +1.6	80		+0.5 +5.0
65	2 1/2		85	3 1/4	
70	2 3/4		90	3 1/2	
			95	3 3/4	
75	2 7/8	+0.4 +2.0	100		
76.2	3		101.6	4	
80	3				
85	3 1/4	+0.5 +2.2			
90	3 1/2				
95	3 3/4	+0.6 +2.5			
100	4				
101.6	4	+0.7 +3.0			
110	4 1/4				
115	4 1/2	+0.8 +3.5			
120	4 3/4				
125	5				
127	5				
130	5	+0.9 +3.8			
135	5 1/4				
140	5 1/2				
150	5 3/4	+1.0 +4.2			
152.4	6				
160	6 1/4	+1.1 +4.5			
165	6 1/2				
170	6 3/4	+1.2 +5.0			
180	7				
190	7 1/2	+1.3 +5.5			
200	8				
203.2	8				

# PA 6C

Nylacast Cast Polyamides

## Cast Polyamides (PA 6C)

Cast nylons are generally accepted as the primary engineering polymer, suitable for virtually any plain bearing application. By varying the conditions of polymerisation the mechanical properties of cast nylons may be altered to suit specific applications, and the performance of the basic polymer can be enhanced with the addition of various additives, fillers, lubricants and colorants.

Key characteristics:

- Unequalled formulation options and profile range
- Excellent mechanical, thermal and chemical resistance
- Excellent PV and load bearing capabilities
- Excellent wear and abrasion resistance
- Good dimensional stability, largely free from internal stresses
- FDA compliant grades available

Standard cast Polyamide (Nylon) grades:

### NYLACAST 6C (PA 6C)

This unmodified grade, produced by an anionic polymerisation casting process, demonstrates similar characteristics to PA 66 E. Cast products contain significantly lower stress levels combined with high strength, good creep and wear resistance resulting in great dimensional accuracy when machining.

NATURAL, BLACK, VARIOUS

### NYLACAST MOLY (PA 6C + MoS<sub>2</sub>)

Improved crystallisation and a degree of self-lubrication occur by the addition of molybdenum disulphide. Hardness increases and simultaneously the general mechanical and anti-friction properties are improved.

BLACK

### NYLACAST HS BLUE (PA 6C + UV & heat stabilisers)

Additives in the form of high temperature resistant colorants, heat and UV stabilisers allow this material to better retain mechanical properties in applications operating at higher temperatures. The inorganic dye used to produce HS BLUE'S distinctive colour conforms to the specifications required by the Japanese market for cast nylon.

BLUE

### NYLACAST OFN (PA 6C + oil)

Whereas Nylacast Oilon adopts a complex blended lubrication system, OFN uses a single oil lubricant reducing production costs and providing a cost effective alternative to our proprietary lubricated materials. Uniform distribution of the lubricant improves wear resistance, coefficient of friction and stick/slip characteristics, whilst maintaining excellent mechanical, thermal and electrical properties.

YELLOW, BLACK

### NYLACAST MOLY OFN (PA 6C + MoS<sub>2</sub> + oil)

The combined lubrication system of molybdenum disulphide and oil integrated in cast nylon provides excellent frictional characteristics whilst retaining the enhanced load bearing capabilities of Moly. The material excels in high pressure, low speed applications demonstrating excellent stick/slip characteristics.

BLUE, BLACK

- Standard Cast PA 6C RODS
- Standard Cast PA 6C PLATES

DIAMETER Ø		TOLERANCE <sup>1)</sup> on the diameter	THICKNESS		TOLERANCE <sup>1)</sup> on the thickness
(mm)	(inches)	(mm)	(mm)	(inches)	(mm)
45	1 3/4	+1 +3	6.35	1/4	+0.5 +1.7
50	1 7/8		8	5/16	
50.8	2		10	3/8	
55	2 1/8		12	7/16	
57	2 1/4		12.7	1/2	
60	2 3/8	+1 +4	15	5/8	+0.5 +2.5
65	2 1/2		16	5/8	
70	2 3/4		20	3/4	
75	2 7/8		25	1	
76.2	3		30	1 1/4	
80	3		32	1 1/4	
85	3 1/4		35	1 3/8	
90	3 1/2		38	1 1/2	
95	3 3/4				
100	4		40	1 1/2	+0.5 +3.5
101.6	4		45	1 3/4	
			50	1 7/8	
105	4 1/4	+2 +5	50.8	2	
110	4 1/4		75	3	+0.5 +5.0
115	4 1/2		57	2 1/4	
120	4 3/4		60	2 3/8	
125	5		65	2 1/2	
127	5		70	2 3/4	
130	5		75	3	
135	5 1/4		80	3	
140	5 1/2		80	3	
150	5 3/4		85	3 1/4	
152.4	6		90	3 1/2	
			95	3 3/4	
160	6 1/4	+2 +7	100	4	
165	6 1/2		101.6	4	
170	6 3/4		110	4 1/4	+1.0 +6.0
180	7		115	4 1/2	
190	7 1/2		120	4 3/4	
200	8				
203.2	8				
210	8 1/4	+3 +9			
220	8 1/2				
230	9				
240	9 1/2				
250	10				
254	10				
260	10 1/2				
270	10 1/2				
280	11				
290	11 1/2				
300	12				
304.8	12				
310	12 1/2	+4 +11			
320	12 1/2				
330	13				
340	13 1/2				
350	14				
360	14				
370	14 1/2				
380	15				
390	15 1/2				
400	16				
410	16	+5 +13			
420	16 1/2				
430	17				
440	17				
450	17 1/2				
460	18				
470	18 1/2				
480	19				
490	19				
500	19 1/2				
>510 <sup>2)</sup>	20				

**Cast nylons are a range of polyamides produced by a casting process involving the anionic polymerisation of caprolactam.** This process allows the production of semi-finished plate, rod, tube and custom castings that are largely free of internal stresses. Natural cast nylon (available also in black) is the basic cast nylon 6 grade and the one from which all other grades of cast nylon stem. Generally accepted as the primary engineering polymer, Natural cast nylon is suitable for virtually any plain bearing application not to mention a huge range of other applications for which this versatile grade finds a use. By varying the conditions of polymerisation the mechanical properties of cast nylon may be altered to suit specific applications and the performance of the basic polymer can be enhanced with the addition of various additives, fillers, lubricants and colorants (see further grades).

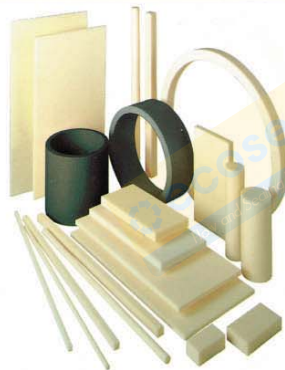


Compared with injection moulding and extrusion grades of polyamide, cast nylons stand out with their improved mechanical, thermal and chemical resistance properties. Specifically the material has a higher tensile, compressive and impact strength as well as an improved resistance to creep and heat ageing. The reasons for these improved characteristics are high crystallinity and a remarkably higher molecular weight. Due to low water absorption, mechanical properties and dimensions are more stable making it suited for components that have to meet closer tolerances. Abrasion resistance and overall wear performance are probably the materials most important characteristics for use in bearing applications and in applications where food contact is involved, cast nylons may be offered as a material conforming with FDA approvals.

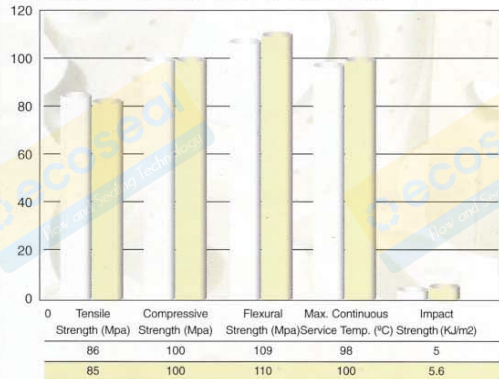
Natural cast nylon has the ability to operate effectively without the need for lubricants and has an increased resistance to wear of over 5 times that for plain bearings manufactured from non-ferrous metals. As is the case with virtually all nylons it is easy to machine, pleasant to work with and relatively light weight - one eighth that of brass - making the handling and fitting of large components manufactured in cast nylon a relatively easy matter.

# Cast Nylon 6

- Good mechanical, thermal and chemical resistance properties
- Universally acknowledged as the primary engineering polymer
- Good PV and load bearing capabilities
- Improved characteristics over extruded polyamides
- Good wear and abrasion resistance
- Good dimensional stability, largely free from internal stresses
- FDA compliance
- Available in a wide range of sizes and colours



**Comparison between Natural Cast Nylon 6 and Extruded Nylon 6/6**



Key to Materials  
 Extruded Nylon 6/6  
 Natural Cast Nylon 6

Property	Test Method	Units	Cast Nylon 6
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	75 - 85
E-modulus**	ISO 527	MPa	3900
Elongation at break	ISO 527	%	>25
Maximum compressive strength*	ISO 604	MPa	90 - 100
Compressive modulus	ISO 604	MPa	2700
Flexural strength*	ISO 178	MPa	100 - 110
Flexural modulus of elasticity	ISO 178	MPa	3300
Impact strength	ISO 180	KJ/m2	5.6
Hardness*	ISO 7619	Shore D	83 - 85
<b>Thermal</b>			
Melting point	ISO 1218	°C	220
Maximum intermittent service temperature	***	°C	+170
Maximum continuous service temperature	***	°C	+100
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>3</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Off White/Black
Specific gravity	ISO 1183	g/cm3	1.15
Resistance to wear	**** PV = 55	mg/Km	0.44
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.39

\* Result depends on chemical formulation  
 \*\* Results taken using 'LVDT' transducer  
 \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)  
 \*\*\*\* Results dependent on ambient temperature

# Cast Nylon 6

**Typical Industrial Users:**

Petrochemical • Aerospace • Railways  
 Ship Building • Food and Food Packaging  
 Bottling and Canning • Pharmaceutical  
 Steel Mills • Quarrying / Mining • Cranes  
 Shoe Manufacturing • Conveyors

**Typical Applications:**

Rollers • Bushes • Gears • Guides  
 Sheaves • Thrust Washers • Pulleys  
 Chain Guide • Cutting Boards • Wear Strip  
 Starwheels • Scrolls • Clamps • Spacers  
 Liners • Ploughs • Mandrels • Sprockets  
 Cams • Seals

The various Nylacast grades are available as standard in seventy diameters of five different lengths, thirteen square section sizes of three different lengths, twenty plate sizes in twenty three thicknesses and thousands of tube OD/ID configurations in four different lengths.

In addition are cut piece derivatives, strips, billets, discs and rings up to 2.5 metres diameter as well as custom castings to specific designs.

The following information corresponds with our current knowledge and indicates our products and possible applications. We cannot give a legally binding guarantee of certain properties or the suitability for a specific application. Existing intellectual property rights must be observed. A definitive quality guarantee is given in our general conditions of sale. Unless otherwise stated, these values represent averages taken from material samples. We reserve the right to make technical alterations.



**Nylacast Moly is a cast nylon 6 material in which improved crystallisation occurs by the addition of Molybdenum Disulphide.** On account of this the superficial hardness increases (providing excellent machineability) and simultaneously the general mechanical and anti-friction properties are improved. Due to the fact that the crystal structure breaks down immediately before the melting temperature is reached the thermal properties of the material are improved over the basic grade.

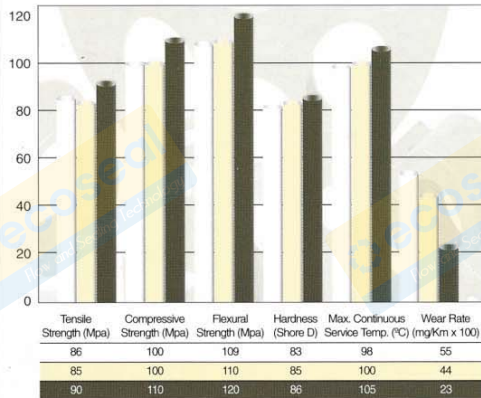


MoS<sub>2</sub> provides a degree of self-lubrication leading to an improvement in the wear properties of the material. These improved properties, combined with lower water absorption extend the range of applications that Moly has over Natural cast nylon. Dynamic bearing applications at elevated operating temperatures of up to 105°C are particularly suited to this material.

A further enhancement that can be applied to this grade (and to all grades in the Nylacast range) is U.V stability. Polymer degradation due to material being exposed outdoors can be minimised thus ensuring consistent performance throughout the products life.

Nylacast Nilstat, which as the name suggests is used in applications where lower static properties are required, is available as an additional grade within the same category as Moly. Although cast nylons perform well in static-sensitive applications, anti-static additives can be applied to further improve any of the grades in the Nylacast product range upon request.

**Analysis of the benefits of Moly**



**Key to Materials**  
 □ Extruded Nylon 6/6  
 □ Natural Cast Nylon 6  
 ■ Moly

# Moly

**Compared with Natural cast nylon:**

- Increased superficial hardness provides excellent machineability
- Improvement in wear properties as a result of dry lubricant
- Improved anti-friction properties
- Improved mechanical properties
- Elevated operating temperatures
- Lower water absorption
- Improved dimensional stability
- Excellent chemical resistance properties
- Good PV and load bearing capabilities
- Extended range of applications



Property	Test Method	Units	Moly
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	80 - 90
E-modulus**	ISO 527	MPa	4100
Elongation at break	ISO 527	%	>20
Maximum compressive strength*	ISO 604	MPa	100 - 110
Compressive modulus	ISO 604	MPa	3000
Flexural strength*	ISO 178	MPa	110 - 120
Flexural modulus of elasticity	ISO 178	MPa	3700
Impact strength	ISO 180	KJ/m2	4.5
Hardness*	ISO 7619	Shore D	84 - 86
<b>Thermal</b>			
Melting point	ISO 1218	°C	220
Maximum intermittent service temperature	***	°C	+170
Maximum continuous service temperature	***	°C	+105
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>6</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Dark Grey
Specific gravity	ISO 1183	g/cm3	1.15
Resistance to wear	**** PV = 55	mg/Km	0.23
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.25

\* Result depends on chemical formulation  
 \*\* Results taken using 'LVDT' transducer  
 \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)  
 \*\*\*\* Results dependent on ambient temperature

# Moly

**Typical Industrial Users:**

Petrochemical • Aerospace • Railways  
 Ship Building • Food and Food Packaging  
 Bottling and Canning • Pharmaceutical  
 Steel Mills • Quarrying / Mining • Cranes  
 Shoe Manufacturing • Conveyors

**Typical Applications:**

Rollers • Bushes • Gears • Guides  
 Sheaves • Thrust Washers • Pulleys  
 Chain Guide • Cutting Boards • Wear Strip  
 Starwheels • Scrolls • Clamps • Spacers  
 Liners • Ploughs • Mandrels • Sprockets  
 Cams • Seals

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**HS Blue is heat stabilised cast nylon 6, easily distinguished by its distinctive blue colour.** Additives in the form of high temperature resistant colorants, heat stabilisers and UV stabilisers allow HS Blue to better retain its mechanical properties in applications operating at higher temperatures. HS Blue conforms to the specifications required by the

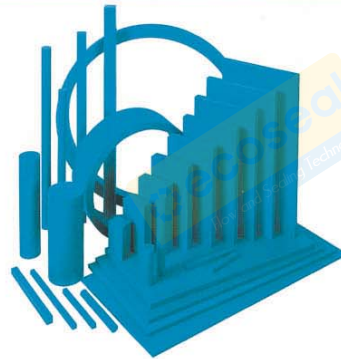


Japanese market for cast nylons, a high percentage of which is serviced by this product alone. This accreditation is held by very few manufacturers of cast nylon due to the difficulties involved during its manufacture.

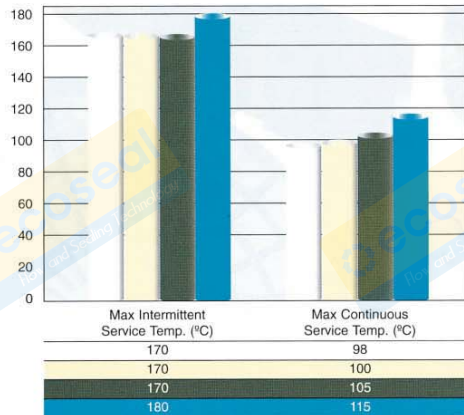
# HS Blue

## Compared with Natural cast nylon:

- Better performance at higher operating temperatures
- Heat stabilised colorants
- UV stabilised
- Improved mechanical properties
- Good dimensional stability as with Natural cast nylon
- Excellent chemical resistance properties
- Good PV and load bearing capabilities
- Conforms to Japanese standards



**Analysis of the benefits of HS Blue**



**Key to Materials**

- Extruded Nylon 6/6
- Natural Cast Nylon 6
- Moly
- HS Blue

Property	Test Method	Units	HS Blue
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	75 - 85
E-modulus**	ISO 527	MPa	4000
Elongation at break	ISO 527	%	>25
Maximum compressive strength*	ISO 604	MPa	90 - 100
Compressive modulus	ISO 604	MPa	2700
Flexural strength*	ISO 178	MPa	100 - 110
Flexural modulus of elasticity	ISO 178	MPa	3300
Impact strength	ISO 180	KJ/m2	5.4
Hardness*	ISO 7619	Shore D	83 - 85
<b>Thermal</b>			
Melting point	ISO 1218	°C	220
Maximum intermittent service temperature	***	°C	+180
Maximum continuous service temperature	***	°C	+115
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>6</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Blue
Specific gravity	ISO 1183	g/cm3	1.15
Resistance to wear	**** PV = 55	mg/Km	0.41
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.39

\* Result depends on chemical formulation  
 \*\* Results taken using 'LVDT' transducer  
 \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)  
 \*\*\*\* Results dependent on ambient temperature

# HS Blue

## Typical Industrial Users:

Petrochemical • Aerospace • Railways  
 Ship Building • Food and Food Packaging  
 Bottling and Canning • Pharmaceutical  
 Steel Mills • Quarrying / Mining • Cranes  
 Shoe Manufacturing • Conveyors

## Typical Applications:

Rollers • Bushes • Gears • Guides  
 Sheaves • Thrust Washers • Pulleys  
 Chain Guide • Cutting Boards • Wear Strip  
 Chainwheels • Scrolls • Clamps • Spacers  
 Liners • Ploughs • Mandrels • Sprockets  
 Cams • Seals

The various Nylacast grades are available as standard in seventy diameters of five different lengths, thirteen square section sizes of three different lengths, twenty plate sizes in twenty three thicknesses and thousands of tube OD/ID configurations in four different lengths.

In addition are cut piece derivatives, strips, billets, discs and rings up to 2,5 metres diameter as well as custom castings to specific designs.

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**OFN is an oil filled cast nylon suitable for dry running applications. Whereas other Nylacast lubricated products adopt complex blended lubricant systems, OFN uses a more basic lubricant which reduces production costs and provides a cost effective alternative to our branded lubricated materials.**



OFN offers improved lubricity and wear resistance over Natural and MoS<sub>2</sub> filled cast nylons. This material contains additives that provide continuous self-lubrication resulting in reduced maintenance costs, improved machinery efficiency, quieter operation and extended life. Oil filled cast nylon has long been the material of choice for applications where Natural cast nylon cannot do the job due to frictional heat build up or need for lubrication. OFN also provides lower moisture absorption, allowing for improved dimensional stability and tighter design tolerances.

A constant wear performance throughout the products service life is achieved by means of a uniform distribution of lubricant. Wear resistance, coefficient of friction and stick/slip characteristics are improved when compared with non-lubricated grades, whilst maintaining excellent mechanical, thermal and electrical properties.

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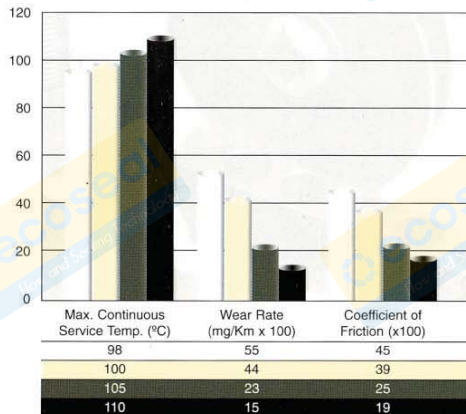
# OFN

## Compared with Natural cast nylon:

- Improved wear and abrasion resistance
- Self lubricating in dry running applications
- Improved PV and load bearing characteristics
- Improved coefficient of friction and stick/slip characteristics
- Consistent wear performance throughout product life
- Excellent mechanical, thermal and chemical resistance properties
- Good dimensional stability
- Reduced water absorption



## Analysis of the benefits of OFN



### Key to Materials

- Extruded Nylon 6/6
- Natural Cast Nylon 6
- Moly
- OFN

Property	Test Method	Units	OFN
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	70 - 75
E-modulus**	ISO 527	MPa	3800
Elongation at break	ISO 527	%	>25
Maximum compressive strength*	ISO 604	MPa	90 - 100
Compressive modulus	ISO 604	MPa	2400
Flexural strength*	ISO 178	MPa	90 - 100
Flexural modulus of elasticity	ISO 178	MPa	3000
Impact strength	ISO 180	KJ/m <sup>2</sup>	5.8
Hardness*	ISO 7619	Shore D	82 - 84
<b>Thermal</b>			
Melting point	ISO 1218	°C	220
Maximum intermittent service temperature	***	°C	+170
Maximum continuous service temperature	***	°C	+110
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>-6</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Black
Specific gravity	ISO 1183	g/cm <sup>3</sup>	1.15
Resistance to wear	**** PV = 55	mg/Km	0.15
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.19

- \* Result depends on chemical formulation
- \*\* Results taken using "LVDT" transducer
- \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)
- \*\*\*\* Results dependent on ambient temperature

# OFN

## Typical Industrial Users:

Petrochemical • Aerospace • Railways  
Ship Building • Food and Food Packaging  
Bottling and Canning • Pharmaceutical  
Steel Mills • Quarrying / Mining • Cranes  
Shoe Manufacturing • Conveyors

## Typical Applications:

Rollers • Bushes • Gears • Guides  
Sheaves • Thrust Washers • Pulleys  
Chain Guide • Cutting Boards • Wear Strip  
Starwheels • Scrolls • Clamps • Spacers  
Liners • Ploughs • Mandrels • Sprockets  
Cams • Seals

The various Nylacast grades are available as standard in seventy diameters of five different lengths, thirteen square section sizes of three different lengths, twenty plate sizes in twenty three thicknesses and thousands of tube OD/ID configurations in four different lengths.

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**Cast Polyamides (PA 6C & 12C)**

Cast nylons are generally accepted as the primary engineering polymer, suitable for virtually any plain bearing application. By varying the conditions of polymerisation the mechanical properties of cast nylons may be altered to suit specific applications, and the performance of the basic polymer can be enhanced with the addition of various additives, fillers, lubricants and colorants.

**Key characteristics:**

- Unequalled formulation options and profile range
- Excellent mechanical, thermal and chemical resistance
- Excellent PV and load bearing capabilities
- Excellent wear and abrasion resistance
- Good dimensional stability, largely free from internal stresses
- FDA compliant grades available

Standard cast Polyamide (Nylon) grades:

**NYLACAST WFN (PA 6C + wax)**

Whereas the Nylacast Nylon range adopts complex blended wax and oil lubrication systems, WFN uses a single wax lubricant uniformly distributed to improve wear resistance and coefficient of friction characteristics. The material has excellent mechanical, thermal and electrical properties and exhibits excellent Pressure-Velocity capabilities.

GREY

**NYLACAST AQUANYL (PA 612C copolymer)**

Aquanyl is a copolymer of nylon 6 and nylon 12 produced by anionic polymerisation of caprolactam and laurilactam. The copolymer makeup gives the product a greater degree of material resilience, reduces moisture absorption and greatly improves impact resistance.

NATURAL, YELLOW

**NYLACAST IMPACT (PA 6C + plasticiser)**

This grade was specifically developed for applications requiring high impact resistance. Other important characteristics are improved insensitivity against stresses, sharp edges, notches and scratches. It also exhibits improved noise reduction and great load bearing capabilities.

BLUE, GREY

**NYLACAST OILON (PA 6C + blended liquid lubricant)**

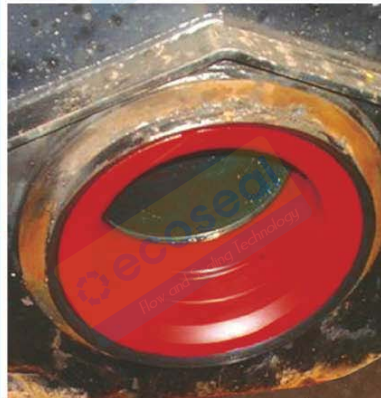
A complex blended oil lubrication system, uniformly distributed throughout the product guarantees constant performance over the whole service life of this exceptional oil-loaded nylon. Excellent sliding frictional properties, abrasion resistance and stick/slip performance make this product a first choice for unlubricated moving parts.

GREEN

**NYLACAST 12C (PA 12C)**

12C is Nylacast's latest development in the field of cast polyamides. The anionic polymerisation process of liquid laurilactam allows greater versatility in profile sizing and the ability to near net shape cast components. The material offers good dimensional stability due to its low moisture absorption, high strength and rigidity, low density, high impact strength and improved low temperature capabilities.

NATURAL



**Aquanyl 612 is a copolymer of nylon 6 and nylon 12 produced via the anionic polymerisation process using the monomers of caprolactam and laurilactam.**

Laurilactam has a similar effect to a plasticiser, but being a copolymer does not suffer the 'leeching out' problems of many plasticiser's. The aim is to impart a greater degree of resilience to the material, for which purpose the co-polymerisation method is very successful.



Aquanyl 612 is employed where additional resilience is a specific requirement for the application, for instance in the ball valve industry where the application of valve seat seals benefits greatly from this material. In addition due to its

copolymer make up with nylon 12 the product has a lower moisture up take than cast nylon providing the obvious benefit of improved dimensional stability.

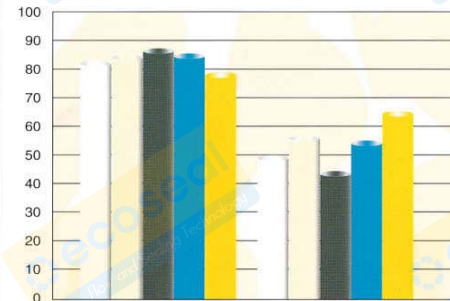
# Aquanyl 612

**Compared with Natural cast nylon:**

- Greater degree of material resilience
- Plasticised benefits without the associated problems
- Reduced water absorption
- Improved dimensional stability
- Good mechanical, thermal and chemical resistance properties
- Improved impact resistance
- Good PV and load bearing capabilities



**Analysis of the benefits of Aquanyl 612**



**Key to Materials**

- Extruded Nylon 6/6
- Natural Cast Nylon 6
- Moly
- HS Blue
- Aquanyl 612

Property	Test Method	Units	Aquanyl
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	70 - 80
E-modulus**	ISO 527	MPa	3700
Elongation at break	ISO 527	%	>30
Maximum compressive strength*	ISO 604	MPa	85 - 95
Compressive modulus	ISO 604	MPa	2000
Flexural strength*	ISO 178	MPa	90 - 100
Flexural modulus of elasticity	ISO 178	MPa	2700
Impact strength	ISO 180	KJ/m <sup>2</sup>	6.5
Hardness*	ISO 7619	Shore D	78 - 82
<b>Thermal</b>			
Melting point	ISO 1218	°C	215
Maximum intermittent service temperature	***	°C	+160
Maximum continuous service temperature	***	°C	+100
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>5</sup>	6 - 9
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R oa	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Yellow
Specific gravity	ISO 1183	g/cm <sup>3</sup>	1.14
Resistance to wear	**** PV = 55	mg/Km	0.37
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.42

\* Result depends on chemical formulation  
 \*\* Results taken using 'LVDT' transducer  
 \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)  
 \*\*\*\* Results dependent on ambient temperature

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## Aquanyl 612

### Typical Industrial Users:

Petrochemical • Aerospace • Railways  
 Ship Building • Food and Food Packaging  
 Bottling and Canning • Pharmaceutical  
 Steel Mills • Quarrying / Mining • Cranes  
 Shoe Manufacturing • Conveyors

### Typical Applications:

Rollers • Bushes • Gears • Guides  
 Sheaves • Thrust Washers • Pulleys  
 Chain Guide • Cutting Boards • Wear Strip  
 Starwheels • Scrolls • Clamps • Spacers  
 Liners • Ploughs • Mandrels • Sprockets  
 Cams • Seals

The various Nylacast grades are available as standard in seventy diameters of five different lengths, thirteen square section sizes of three different lengths, twenty plate sizes in twenty three thicknesses and thousands of tube OD/ID configurations in four different lengths.

In addition are cut piece derivatives, strips, billets, discs and rings up to 2.5 metres diameter as well as custom castings to specific designs.

**Impact is a grade specifically developed for applications requiring high impact resistance and/or noise reduction capabilities.** The important characteristics of these materials are their improved insensitivity against stresses, sharp edges, notches, scratches etc.

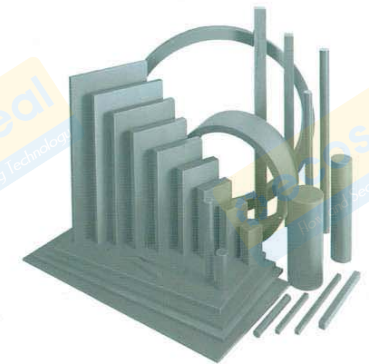


Impact is ideally suited to applications such as support rollers for the aggregate processing industry, dollies used in conjunction with pile drivers and crane feet pads as well as roller coaster wheels in relation to noise reduction. However there are many industries and applications within which this type of material would be very beneficial over the basic grade of Natural cast nylon.

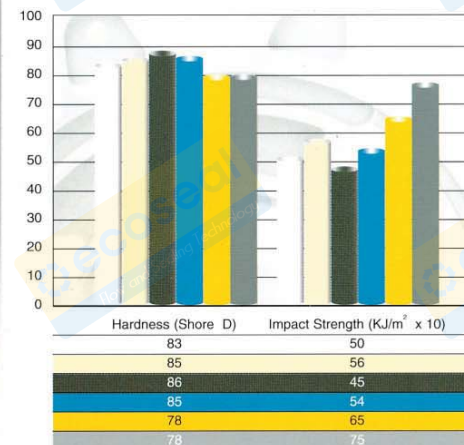
# Impact

### Compared with Natural cast nylon:

- Significantly improved impact resistance
- Improved insensitivity against stresses, sharp edges, notches and scratches
- Free of internal stresses
- Good mechanical, thermal and chemical resistance properties
- Improved noise reduction capability
- Good PV and load bearing capabilities
- Good dimensional stability



**Analysis of the benefits of Impact**



**Key to Materials**

- Extruded Nylon 6/6
- Natural Cast Nylon 6
- Moly
- HS Blue
- Aquanyl 612
- Impact



Property	Test Method	Units	Impact
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	55 - 65
E-modulus**	ISO 527	MPa	3200
Elongation at break	ISO 527	%	>30
Maximum compressive strength*	ISO 604	MPa	85 - 95
Compressive modulus	ISO 604	MPa	1800
Flexural strength*	ISO 178	MPa	80 - 90
Flexural modulus of elasticity	ISO 178	MPa	2400
Impact strength	ISO 180	KJ/m2	7.5
Hardness*	ISO 7619	Shore D	78 - 82
<b>Thermal</b>			
Melting point	ISO 1218	°C	200
Maximum intermittent service temperature	***	°C	+150
Maximum continuous service temperature	***	°C	+100
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>-6</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Light Grey
Specific gravity	ISO 1183	g/cm3	1.15
Resistance to wear	**** PV = 55	mg/Km	0.49
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.56

\* Result depends on chemical formulation  
 \*\* Results taken using 'LVDT' transducer  
 \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)  
 \*\*\*\* Results dependent on ambient temperature

## Impact

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Petrochemical • Aerospace • Railways  
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 Bottling and Canning • Pharmaceutical  
 Steel Mills • Quarrying / Mining • Cranes  
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### Typical Applications:

Rollers • Bushes • Gears • Guides  
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## Oilon was a break through of the first magnitude in the world of cast nylons, developed in the early 70s by Nylacast Ltd and introduced to the market in 1974.

Oilon was the very first authentic lubricated Nylon having a blended liquid lubricant system built in during the process stages, which obviously resulted in a substantial increase in bearing life 5 times that of Natural cast nylon and 25 times that of phosphor bronze! The lubricant contained within the material will not drain, machine, spin, leech or dry out and never needs replenishment.



A uniformed distribution of the lubricant throughout the product guarantees a constant performance over the whole service life and improvements in rate of wear, sliding frictional properties abrasion resistance and stick slip performance

are just a few of the benefits offered by this material. Oilon has been successful in considerably enlarging the application possibilities of nylons in many areas and specifically that of unlubricated moving parts. Oilon has acquired an unmatched track record over the past 20 - odd years and continues to go from strength to strength, for Nylacast has over this period produced thousands of tons of Oilon and the trend continues. There have been many imitators over the years since Oilon has been introduced, however Oilon has not yet been equalled by its rivals and remains the premier oil-lubricated nylon available from any source. Oilon is suitable for use in applications in both the food and pharmaceutical industries.

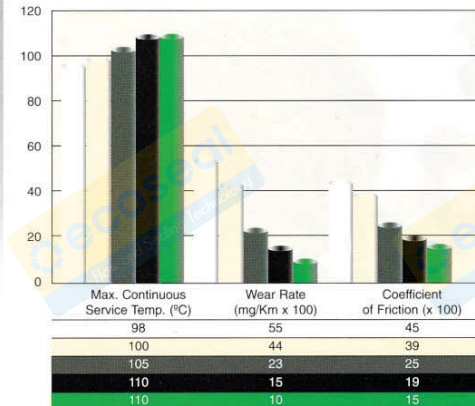
# Oilon

### Compared with OFN:

- First authentic lubricated nylon
- Improved wear and abrasion resistance
- Improved PV characteristics
- Improved coefficient of friction and stick/slip characteristics
- Consistent wear performance throughout product life
- Reduced water absorption
- Excellent mechanical, thermal and chemical resistance properties
- Good dimensional stability
- FDA compliant for direct food contact applications
- Blended liquid lubricant system



### Analysis of the benefits of Oilon



### Key to Materials

- Extruded Nylon 6/6
- Natural Cast Nylon 6
- Moly
- OFN
- Oilon

Property	Test Method	Units	Oilon
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	70 - 75
E-modulus**	ISO 527	MPa	4000
Elongation at break	ISO 527	%	>30
Maximum compressive strength*	ISO 604	MPa	90 - 100
Compressive modulus	ISO 604	MPa	2500
Flexural strength*	ISO 178	MPa	95 - 105
Flexural modulus of elasticity	ISO 178	MPa	3100
Impact strength	ISO 180	KJ/m <sup>2</sup>	6
Hardness*	ISO 7619	Shore D	82 - 84
<b>Thermal</b>			
Melting point	ISO 1218	°C	220
Maximum intermittent service temperature	***	°C	+170
Maximum continuous service temperature	***	°C	+110
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>6</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Green
Specific gravity	ISO 1183	g/cm <sup>3</sup>	1.15
Resistance to wear	**** PV = 55	mg/Km	0.11
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.15

\* Result depends on chemical formulation  
 \*\* Results taken using 'LVDT' transducer  
 \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)  
 \*\*\*\* Results dependent on ambient temperature

## Oilon

### Typical Industrial Users:

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### NYLUBE

The Nylube grades are Nylacast's proprietary modified range of cast polyamides, synonymous with outstanding material performance and exhibiting substantially improved wear and abrasion resistance compared to that of any other currently available lubricated grade of cast nylon.

(Separate literature is available for this range)

#### Key characteristics:

- Outstanding wear and abrasion resistance
- Significantly improved PV characteristics
- Outstanding lubricity and low coefficient of friction
- Greatly improved stick/slip capabilities
- Wide load, speed and temperature operating range
- FDA compliant grades for direct food contact applications

Standard cast Nylube grades:

#### NYLUBE (PA 6C + blended solid and liquid lubricant)

This supreme wear resistant grade contains a combined liquid/solid lubricant system, which allows for a coefficient of friction as low as 0.08. The material has outstanding Pressure-Velocity capabilities and is particularly suited to dry running bearing applications throughout a wide load and speed range.

NATURAL, BLACK, RED

#### NYLUBE FG (PA 6C + Nylube lubricant + FDA compliant)

NYLUBE FG is physiologically inert and holds full FDA accreditation for use in food and pharmaceutical applications, whilst retaining all the material characteristics of the standard product.

NATURAL, YELLOW

#### NYLUBE MO (PA 6C + Nylube lubricant + MoS<sub>2</sub>)

The combined Nylube lubrication system incorporating fine particles of molybdenum disulphide provides enhanced load bearing capabilities whilst retaining Nylube's excellent frictional characteristics.

BLACK

#### NYLUBE GF (PA 6C + Nylube lubricant + glass)

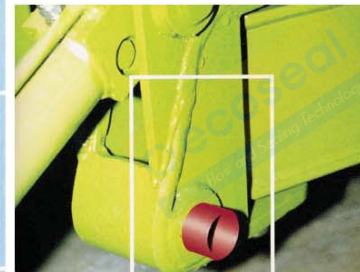
For applications requiring higher compressive strength the NYLUBE GF masterbatch incorporates hollow glass ovules, designed to float and evenly distribute through the polymerising polymer. The glass additive allows the material to operate at higher maximum service temperatures whilst the wax counteracts the deteriorating surface slip characteristics. This results in an outstanding abrasion and temperature resistant material at high loads.

BLACK

#### SUPER NYLUBE (PA 6C + new lubrication system)

Developed exclusively for sliding wear pad and linear bearing components SUPER NYLUBE demonstrates remarkably low dynamic and static coefficient of friction properties, resulting in the virtual elimination of stick/slip and vibration problems. This groundbreaking material sets a new standard for abrasion resistance and component performance, perfectly complementing the existing Nylacast lubricated range.

VIOLET, ORANGE, BLACK



Nylube was introduced into the Nylacast product range in 1989 as a logical progression to Oilon's already outstanding performance as a bearing material.

Since that time, it has proved to be Nylacast's supreme wear-resisting grade and one of the most important developments from Nylacast in new materials. Nylube contains a combined liquid/solid lubricant system which allows for a coefficient of friction as low as 0.08. This is below that of almost any other polymer available at present.



Nylube has substantially improved the wear resistance abilities compared to that of any other currently available lubricated grade of cast nylon, whilst retaining excellent physical property characteristics.

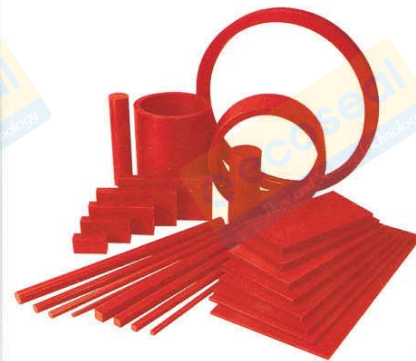
The material is particularly suited to dry running bearing applications throughout a wide load, speed and temperature range (up to 120°C). Like Oilon, Nylube is suitable for use in applications in the food and pharmaceutical industries.

Separate literature is available for this grade.

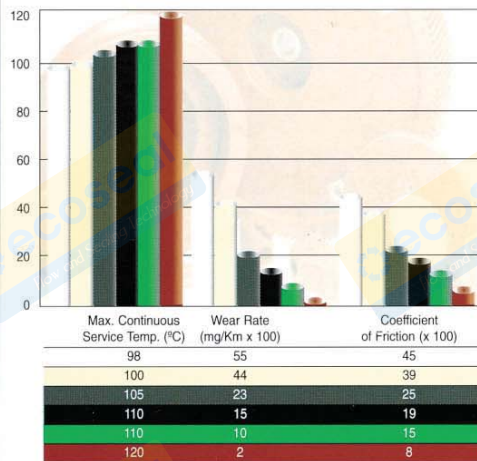
# Nylube

## Compared with OFN:

- Outstanding wear and abrasion resistance
- Significantly improved PV characteristics
- Improved operating temperature capability
- Outstanding lubricity and low coefficient of friction
- Greatly improved stick/slip capabilities
- Wide load, speed and temperature operating range
- Consistent wear performance throughout product life
- Excellent dimensional stability
- Reduced water absorption
- Excellent chemical resistance
- Blended solid/liquid lubricant system
- FDA compliant for direct food contact applications



**Analysis of the benefits of Nylube**



### Key to Materials

- Extruded Nylon 6/6
- Natural Cast Nylon 6
- Moly
- OFN
- Oilon
- Nylube

Property	Test Method	Units	Nylube
<b>Mechanical</b>			
Tensile strength*	ISO 527	MPa	75 - 85
E-modulus**	ISO 527	MPa	4000
Elongation at break	ISO 527	%	>20
Maximum compressive strength*	ISO 604	MPa	90 - 100
Compressive modulus	ISO 604	MPa	2600
Flexural strength*	ISO 178	MPa	100 - 110
Flexural modulus of elasticity	ISO 178	MPa	3200
Impact strength	ISO 180	KJ/m <sup>2</sup>	6
Hardness*	ISO 7619	Shore D	82 - 84
<b>Thermal</b>			
Melting point	ISO 1218	°C	220
Maximum intermittent service temperature	***	°C	+180
Maximum continuous service temperature	***	°C	+110
Minimum intermittent service temperature	***	°C	-100
Minimum continuous service temperature	***	°C	-40
Thermal coefficient of linear expansion****	ISO 11359	1/K.10 <sup>6</sup>	5 - 8
<b>Electrical</b>			
Dielectric constant	IEC 250	-	3.7
Dielectric strength	IEC 243	KV/mm	>25
Volume resistivity	IEC 93	ohms.cm	10 <sup>15</sup>
Surface resistivity R <sub>oa</sub>	IEC 93	Ohms	10 <sup>15</sup>
Resistance to tracking	IEC 112	CTI	CTI 600
<b>Miscellaneous</b>			
Colour	-	-	Red
Specific gravity	ISO 1183	g/cm <sup>3</sup>	1.15
Resistance to wear	**** PV = 55	mg/Km	0.02
Coefficient of friction factor (C-factor)	**** PV = 55	-	0.08

- \* Result depends on chemical formulation
- \*\* Results taken using 'LVDT' transducer
- \*\*\* Results using hot / cold box and consultancy at St Petersburg University (Russia)
- \*\*\*\* Results dependent on ambient temperature

## Nylube

### Typical Industrial Users:

Petrochemical • Aerospace • Railways  
Ship Building • Food and Food Packaging  
Bottling and Canning • Pharmaceutical  
Steel Mills • Quarrying / Mining • Cranes  
Shoe Manufacturing • Conveyors

### Typical Applications:

Rollers • Bushes • Gears • Guides  
Sheaves • Thrust Washers • Pulleys  
Chain Guide • Cutting Boards • Wear Strip  
Starwheels • Scrolls • Clamps • Spacers  
Liners • Ploughs • Mandrels • Sprockets  
Cams • Seals

The various Nylacast grades are available as standard in seventy diameters of five different lengths, thirteen square section sizes of three different lengths, twenty plate sizes in twenty three thicknesses and thousands of tube OD/ID configurations in four different lengths.

In addition are cut piece derivatives, strips, billets, discs and rings up to 2.5 metres diameter as well as custom castings to specific designs.

The following information corresponds with our current knowledge and indicates our products and possible applications. We cannot give a legally binding guarantee of certain properties or the suitability for a specific application. Existing intellectual property rights must be observed. A definitive quality guarantee is given in our general conditions of sale. Unless otherwise stated, these values represent averages taken from material samples. We reserve the right to make technical alterations.



## 🇬🇧 Polyacetals (POM)

Polyacetals are highly crystalline thermoplastics, characterised by their high mechanical strength, rigidity and impact resistance. Acetal absorbs very little moisture, enabling the product to maintain constant physical properties in a variety of changing environments. POM exhibits excellent dimensional stability and is ideally suited to close tolerance mechanical parts. Nylocast produce and modify profiles in both the virgin copolymer and homopolymer grades.

### Key characteristics:

- High mechanical strength and rigidity
- High impact strength and creep resistance
- Excellent dimensional stability and machinability
- Low moisture absorption
- Good electrical insulating and dielectric properties
- No centreline porosity in copolymer grades
- Suitable for food contact

Standard extruded Polyoxymethylene (Polyacetal) grades:

### POM C (Acetal copolymer)

The copolymer grade is the ideal combination of strength, stiffness and wear resistance. It absorbs very little moisture, is easily machinable and is genuinely porosity-free, making it the preferred grade for food contact and medical applications. The product exhibits an elevated resistance to hydrolysis, strong alkalis and thermal-oxidative degradation when compared to acetal homopolymer.

NATURAL, BLACK, VARIOUS

### POM CPE (Acetal copolymer + PE)

Self-lubrication is achieved by the incorporation of ultra-high molecular weight polyethylene to the copolymer grade, improving sliding, dry-running and abrasion resistance properties. The material also has extremely low moisture absorption, helping to improve component dimensional stability.

BLUE

### POM CGF (Acetal copolymer + 30% glass fibre)

This copolymer grade is reinforced with glass fibre to achieve greater mechanical strength, rigidity and dimensional stability. The material also exhibits higher heat resistant properties.

WHITE, BLACK

### POM H (Acetal homopolymer (DuPont™ Delrin®))

The homopolymer grade exhibits slightly higher mechanical properties, illustrated in the hardness, rigidity and creep resistance. The material also demonstrates elevated wear resistance and has a lower thermal expansion rate than acetal copolymer.

WHITE, BLACK

### POM HT (Delrin® acetal homopolymer + DuPont™ Teflon®)

The inclusion of DuPont™ Teflon® fibres uniformly dispersed in the compound improves the products frictional and sliding capabilities, improving wear and stick/slip behaviour.

BROWN

- Standard Extruded POM RODS
- Standard Extruded POM PLATES

DIAMETER Ø		TOLERANCE <sup>1)</sup> on the diameter		THICKNESS		TOLERANCE <sup>1)</sup> on the thickness	
(mm)	(inches)	(mm)	(inches)	(mm)	(inches)	(mm)	(inches)
5	3/16	+0.1	+0.4	6.35	1/4	+0.2	+0.9
6	1/4			8	5/16		
				10	3/8		
8	5/16	+0.1	+0.5				
10	3/8			12	7/16	+0.3	+1.5
				12.7	1/2		
12	7/16	+0.2	+0.7	15	1/2		
12.7	1/2			16	5/8		
14	9/16			18	3/4		
15	9/16			20	3/4		
16	5/8			22	7/8		
18	3/4			25	1		
20	3/4						
22	7/8	+0.2	+0.9	28	1 1/8	+0.5	+2.5
25	1			30			
28	1 1/8			32	1 1/4		
30	1 1/4			35	1 3/8		
				38	1 1/2		
32	1 1/4	+0.2	+1.1	45	1 3/4		
35	1 3/8			50	1 7/8		
40	1 1/2			50.8	2		
45	1 3/4	+0.3	+1.3	57	2 1/4	+0.5	+3.5
50	1 7/8			60	2 3/8		
50.8	2			65	2 1/2		
55	2 1/8			70	2 3/4		
57	2 1/4			76.2	3		
60	2 3/8	+0.3	+1.6	80	3	+0.5	+5.0
65	2 1/2			85	3 1/4		
70	2 3/4			90	3 1/2		
				95	3 3/4		
75	2 7/8	+0.4	+2.0	100	4		
76.2	3			101.6	4		
80	3						
85	3 1/4	+0.5	+2.2	110	4 1/4	+1.0	+6.0
90	3 1/2			115	4 1/2		
				120	4 3/4		
95	3 3/4	+0.6	+2.5				
100	4						
101.6	4	+0.7	+3.0				
110	4 1/4						
115	4 1/2	+0.8	+3.5				
120	4 3/4						
125	5						
127	5						
130	5	+0.9	+3.8				
135	5 1/4						
140	5 1/2						
150	5 3/4	+1.0	+4.2				
152.4	6						
160	6 1/4	+1.1	+4.5				
165	6 1/2						
170	6 3/4	+1.2	+5.0				
180	7						
190	7 1/2	+1.3	+5.5				
200	8						
203.2	8						
210	8 1/2	+1.3	+5.8				
215.9	8 1/2						
220	9						
230	9	+1.5	+6.2				
240	9 1/2						
250	10						
254	10						
260	10 1/2	+1.6	+6.5				
270	11						
280	11						
290	11 1/2						
300	12	+1.7	+7				
304.8	12						



## 🇬🇧 Polyethylene Terephthalate (PET)

PET is an unreinforced, semi-crystalline thermoplastic polyester, demonstrating dimensional stability similar to acetal, combined with the comparable wear resistance of nylon. Heavily loaded mechanical precision components subjected to sustained abrasive environments are particularly suited to this material:

### Key characteristics:

- Excellent dimensional stability
- High mechanical strength, hardness and rigidity
- Excellent wear resistance
- Good creep resistance
- Low moisture absorption
- Low thermal expansion
- Good resistance to radiant energy
- Good electrical insulating properties
- Stain resistant
- Suitable for food contact

Standard extruded Polyethylene Terephthalate (Polyester) grades:

### PET (Polyethylene terephthalate)

PET demonstrates outstanding dimensional stability, extremely low water absorption and relatively low thermal expansion. These properties are coupled to high mechanical strength, excellent creep and wear resistance, good electrical insulation and chemical resistance properties.

WHITE, BLACK

### PET LL (Polyethylene terephthalate + liquid lubricant)

A uniform distribution of Nylocast's silicone based liquid lubricant system improves wear resistance, coefficient of friction and stick/slip characteristics, whilst maintaining the base materials excellent dimensional stability.

BLACK

### PET SL (Polyethylene terephthalate + solid lubricant)

This internally lubricated grade incorporates a uniformly dispersed solid lubricant; demonstrating improved frictional properties, outstanding wear resistance and excellent pressure-velocity characteristics over the basic grade.

LIGHT GREY

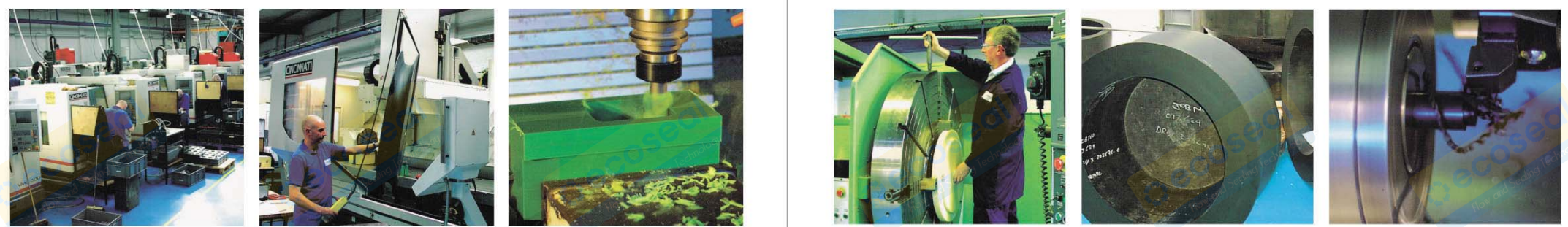
- Standard Extruded PET RODS
- Standard Extruded PET PLATES

DIAMETER Ø		TOLERANCE <sup>1)</sup> on the diameter		THICKNESS		TOLERANCE <sup>1)</sup> on the thickness	
(mm)	(inches)	(mm)	(inches)	(mm)	(inches)	(mm)	(inches)
5	3/16	+0.1	+0.4	6.35	1/4	+0.2	+0.9
6	1/4			8	5/16		
				10	3/8		
8	5/16	+0.1	+0.5				
10	3/8			12	7/16	+0.3	+1.5
				12.7	1/2		
12	7/16	+0.2	+0.7	15	1/2		
12.7	1/2			16	5/8		
14	9/16			18	3/4		
15	9/16			20	3/4		
16	5/8			22	7/8		
18	3/4			25	1		
20	3/4						
22	7/8	+0.2	+0.9	28	1 1/8	+0.5	+2.5
25	1			30			
28	1 1/8			32	1 1/4		
30	1 1/4			35	1 3/8		
				38	1 1/2		
32	1 1/4	+0.2	+1.1	45	1 3/4		
35	1 3/8			50	1 7/8		
40	1 1/2			50.8	2		
45	1 3/4	+0.3	+1.3	57	2 1/4	+0.5	+3.5
50	1 7/8			60	2 3/8		
50.8	2			65	2 1/2		
55	2 1/8			70	2 3/4		
57	2 1/4			76.2	3		
60	2 3/8	+0.3	+1.6	80	3	+0.5	+5.0
65	2 1/2			85	3 1/4		
70	2 3/4			90	3 1/2		
				95	3 3/4		
75	2 7/8	+0.4	+2.0	100	4		
76.2	3			101.6	4		
80	3						
85	3 1/4	+0.5	+2.2	110	4 1/4	+1.0	+6.0
90	3 1/2			115	4 1/2		
				120	4 3/4		
95	3 3/4	+0.6	+2.5				
100	4						
101.6	4	+0.7	+3.0				
110	4 1/4						
115	4 1/2	+0.8	+3.5				
120	4 3/4						
125	5						
127	5						
130	5	+0.9	+3.8				
135	5 1/4						
140	5 1/2						
150	5 3/4	+1.0	+4.2				
152.4	6						
160	6 1/4	+1.1	+4.5				
165	6 1/2						
170	6 3/4	+1.2	+5.0				
180	7						
190	7 1/2	+1.3	+5.5				
200	8						
203.2	8						

• Propriétés Physiques • Physische Eigenschaften • Propiedades Físicas • Caratteristiche Fisiche

Metric Units

PROPERTIES	TEST METHOD	UNITS	NOTES	6E	6CC	6AE	6OLY	6ZE	6GF	6CC GF	6GF	NATURAL BLACK OTHERS	6OLY	HS BLUE	6OFN	6OLY OFN	6WFN	IMPACT	AQUAMYL	DILON	PA 12C	NYLUBE	NYLUBE FG	NYLUBE MO	NYLUBE GF	PON C	PON C GF 30%	PON CFE	PON H	PON HT	PET	PET LL	PET SL
<b>GENERAL COLOUR</b>				NATURAL BLACK	BLACK	NATURAL BLACK	BLACK	NATURAL BLACK	BLACK	BLACK	BLACK	NATURAL BLACK OTHERS	BLACK	BLUE	BLACK YELLOW	BLUE BLACK	GREY	BLUE GREY	NATURAL YELLOW	GREEN	NATURAL	RED BLACK NATURAL	NATURAL YELLOW	BLACK	BLACK	WHITE BLACK BLUE	PON C GF 30%	BLACK	WHITE BLACK	BROWN	WHITE BLACK	BLACK	LIGHT GREY
Density ISO1183:1987		g/cm <sup>3</sup>		1.135	1.140	1.145	1.14	1.010	1.360	1.300	1.300	1.145	1.150	1.140	1.140	1.145	1.145	1.140	1.140	1.140	1.020	1.145	1.145	1.145	1.140	1.410	1.550	1.350	1.410	1.500	1.370	1.440	1.440
Moisture Absorption (Equilibrium)	ISO 62:1999	%	50% RH, 23C	3	2.7	2.6	-	0.7	2.1	3	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.15	0.1	0.2	0.17	0.25	0.23	0.23	
Water Absorption (24 Hours)	ISO 62:1999 (modified)	%	Immersion, 23C	-	0.30	0.40	-	-	-	-	0.39	-	-	-	-	-	-	-	0.20	-	-	-	-	-	0.20	-	0.18	0.21	0.18	0.07	0.06	0.06	
Water Absorption (Saturation)	ISO 62:1999	%	Immersion, 23C	9.50	7.00	8.50	7.0	1.50	6.60	6.70	5.50	7.00	-	-	-	-	-	-	5.00	-	-	-	-	-	0.90	-	0.80	0.90	0.75	0.50	0.40	0.4	
<b>MECHANICAL</b>																																	
Tensile strength*	ISO 527-1/2:1993	MPa	Sample Type 1B, 50mm min <sup>1</sup>	75	80	80	92	50	100	120	110	80	85	80	75	80	80	60	75	75	60	80	80	85	70	70	130	70	80	70	90	75	80
Elongation at break	ISO 527-1/2:1993	%	Sample Type 1B, 50mm min <sup>1</sup>	>30	>20	>20	>25	>50	>5	>5	>5	>20	>20	>20	>20	>20	>20	>30	>30	>30	>20	>20	>20	>10	>15	>5	>20	>20	>25	>15	>20	>10	>10
Compressive Strength*	ISO 604:2002	MPa	Sample Type A, 5mm min <sup>1</sup>	90	95	90	-	-	-	-	90	95	105	95	95	100	95	90	90	90	95	85	95	100	105	110	110	130	110	100	96	100	100
Compressive Modulus	ISO 604:2002	MPa	Sample Type A, 1mm min <sup>1</sup>	2600	2500	3200	-	-	-	-	2700	3000	2700	2400	2700	2600	1800	2000	2500	1600	2600	2600	2600	2800	2600	2600	2600	3100	2600	2800	2600	2700	2700
Flexural Strength*	ISO 178:2001	MPa	1.5mm min <sup>1</sup>	80	100	100	-	-	-	-	105	115	105	95	100	105	85	95	100	90	105	105	110	110	80	-	80	90	90	100	90	95	95
Flexural Modulus	ISO 178:2001	MPa	1.5mm min <sup>1</sup>	2100	3000	3100	-	-	-	-	3300	3700	3300	3000	3300	2400	2700	3000	2400	3100	3400	3400	3500	3000	2600	-	2600	3100	3100	2500	2300	2400	2400
Notch Impact Strength	ISO 180:2000	KJ/m <sup>2</sup>	Sample Type A (Notched)	8.00	6.00	5.70	4.00	10.00	-	-	6.00	5.6	4.50	5.4	5.80	6.00	6.00	10.00	6.50	6.00	13.00	6.00	6.00	6.00	4.50	7.20	-	7.2	7.50	8.50	2.00	3.00	2.50
Charpy Impact Strength	ISO 179-2:1999	KJ/m <sup>2</sup>	Notched	-	-	-	4.00	-	15.00	-	6.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.00	-	2.00	3.00	2.50	
Hardness (Shore D)	ISO 868:2003	-		84	80	-	-	72	-	-	-	84	85	84	83	84	84	80	80	83	-	84	84	85	-	85	-	85	86	82	-	-	-
Coefficient of Friction (Dynamic)			31.4m/min, 1.75MPa	-	-	0.25	0.22	0.30	-	-	-	0.39	0.25	0.15	0.19	0.21	0.10	-	-	0.15	-	0.08	0.08	0.12	-	0.25	-	0.25	0.19	0.25	0.21	0.19	
Limiting PV		MPa.m/min		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	0.08	-	-	6	-	5.7	6	18	-	-	
K-Factor		mm <sup>3</sup> /Nm	31.4m/min, 1.75MPa	-	-	-	-	-	-	-	-	5.0 x 10 <sup>-4</sup>	-	-	1.70 x 10 <sup>-4</sup>	-	-	-	-	-	1.2 x 10 <sup>-4</sup>	0.25 x 10 <sup>-4</sup>	0.25 x 10 <sup>-4</sup>	0.91 x 10 <sup>-4</sup>	-	6	-	-	-	-	-	-	
<b>THERMAL</b>																																	
Melting Temperature		°C		220	220	260	263	178	220	200	260	220	220	220	220	220	200	215	220	178	220	220	-	220	170	170	170	178	178	255	255	255	
Glass Transition Temperature (T <sub>g</sub> )	ISO 11359-2:1999	°C		60	-	72	75	45	60	120	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-60	-60	-60	70	70	70	70	
Heat Deflection Temperature HDT(A)	ISO 75	°C	1.80MPa	160	-	100	105	50	210	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	110	120	118	85	75	75	-	
Heat Deflection Temperature HDT(B)	ISO 75	°C	0.45MPa	160	-	205	205	120	220	-	250	-	-	-	-	-	-	-	-	-	122	-	-	-	-	160	170	166	170	160	160	160	-
Maximum Intermittent Service Temperature		°C		160	170	170	170	150	180	170	200	170	170	180	170	180	150	160	170	155	180	180	185	190	140	140	150	145	170	160	160	160	
Maximum Continuous Service Temperature		°C	5000hrs	70	110	100	100	110	100	110	120	100	105	115	110	115	110	100	100	110	110	110	110	115	120	90	100	90	110	90	110	105	105
Minimum Intermittent Service Temperature		°C		-	-	-	-	-	-	-	-	-100	-100	-100	-100	-100	-100	-100	-100	-100	-	-100	-100	-100	-100	-	-	-	-	-	-	-	
Minimum Continuous Service Temperature		°C		-40	-40	-	-	-	-	-	-20	-40	-40	-40	-40	-40	-40	-40	-40	-40	-	-40	-40	-40	-40	-	-	-	-	-	-	-	
Coefficient of Linear Thermal Expansion (TMA)	ISO 11359-2:1999	°C	23°C - 55°C	8.5 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	10 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	11 x 10 <sup>-5</sup>	3 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	5 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8.5 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	11.5 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	8 x 10 <sup>-5</sup>	9.2 x 10 <sup>-5</sup>	3 x 10 <sup>-5</sup>	9.2 x 10 <sup>-5</sup>	9 x 10 <sup>-5</sup>	10 x 10 <sup>-5</sup>	7 x 10 <sup>-5</sup>	6.7 x 10 <sup>-5</sup>	6.7 x 10 <sup>-5</sup>	
Thermal Conductivity	ISO 8301:1991	W/m.K	Mean T = 20°C	0.28	-	0.23	0.25	0.23	0.28	-	0.27	0.26	-	-	-	-	-	-	-	-	0.30	-	-	-	0.31	-	0.31	0.23	0.23	0.29	0.29	0.29	
Flammability	IEC 60959-11:10:2003-08	HB		HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB
<b>ELECTRICAL</b>																																	
Dielectric Constant	IEC 60250:1969-01	-	1MHz	3.5	3.7	3.6	-	3.6	3.8	3.7	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.1	3.7	3.7	3.7	3.7	3.8	4.8	3.8	3.7	3.6	3.2	3.2	3.2	
Dielectric Constant (Low Frequency)	IEC 60250:1969-01	-	100Hz	3.9	4	4.3	-	-	-	4	3.9	4	4	4	4	4	4	4	4	4	4	4	4	4	4	-	-	-	-	-	-	-	
Dissipation Factor	IEC 60250:1969-01	-	100 Hz	0.021	-	0.024	-	0.026	0.023	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	0.005	0.005	0.005	0.005	0.006	0.001	0.001	0.001	
Dielectric Strength	IEC 60243-1:1998-01	kV/mm		25	25	30.5	-	32	32	25	30	25	25	25	25	25	25	25	25	25	25	25	29	25	16.5	16.5	18	16.5	22	22	22	22	
Volume Resistivity	IEC 60093:1980-01	ohm.m		1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	7 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	
Surface Resistivity RDA	IEC 60093:1980-01	ohm		1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	5 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>	
Comparative Tracking Index	IEC 60112:2003-01	CTI		600	600	600	-	600	575	600	475	600	600	600	600	600	600	600	600	600	600	600	604	600	600	-	600	600	600	600	600	600	600



• Résistance Chimique • Chemischer Widerstand • Resistencia Química • Resistenza Chimica

CHEMICAL NAME	CONCENTRATION	TEMPERATURE	TEMPERATURE			
			PA6, PA66	POM C	POM H	PET
Acetone	100	RT	A	A	A	B
Acetylchloride	100	RT	C	C		
Acetylene	100	RT	A	A	-	A
Alkylbenzonic	100	RT	A	A		
Aluminum Salt of Mineral Acids	20	RT	B	B		A
Benzene	100	RT	A	A	A	A
	100	65	A	A	A	C
	100	80	A	A		C
Boric Acid	10	RT	B	B		A
Bromine	100	RT	C	C		C
Bromine Liquid	100	RT	C			
Bromine Water	55	RT	C	C		
Butadiene	100	RT	A	A		A
Butane	100	RT	A	A		A
Butyl Glycol	100	RT	A	A		A
Calcium Carbonate	55	RT	A			
Calcium Chloride	55	RT	B	A	-	A
	55	100	C	A		
Calcium Hydroxide	10	RT	A	A	A	A
	55	RT	A	A		A
Carbon Dioxide	UD	RT	A	A	A	A
Chlorine (liquid)	100	RT	C	C		
Chlorine (gas)	100	RT	C	C		
Chlorobenzene	100	RT	A	A		A
	100	50	A	A		C
Chloroform	100	RT	C	C		C
Chlorosulfonic Acid	10	RT	C	C		C
Chromyl Chloride	100	RT	C	C		C
Citric Acid	10	RT	B	A	A	A
	10	50	B	C		
Cyclohexane	100	RT	A	A		A
Detergent Solutions	100	RT	A	A	A	A
	100	80	A	A		B
Development Liquid	CA	RT	A	A		A
Dichlorobenzene	100	RT	A			
Dichloroethane	100	RT	A	A		C
Dichlorotetrafluoroethane	100	RT	A	A		A
Diesel	CA	RT	A	A		A
	CA	85	A	A		A
Diethyl Glycol	100	RT	A	A		A
Dimethyl Ether	100	RT	A	A		A
Dimethylformamide	100	RT	A	A	A	A
Ethane	100	RT	A	A	A	A
Ethene	100	RT	A	A		A
Ethyl Acetate	100	RT	A	A	A	A
Ethyl Alcohol	40	RT	A	A	A	A
Ethyl Chloride	100	RT	B	A		
Ethylene Glycol	100	RT	A	A	B	A
	100	60		B		B
	100	100	C			
Fat (Vegetable Oil)	CA	RT	A	A	A	A
Fatty Acids	5	RT	A	A	A	A
	UD	RT	A	A		A

A Resistant - Little change in weight or dimensions, small effect on mechanical properties  
 B Partially Resistant - Slow deterioration in mechanical properties overtime. Short exposure may be allowable.  
 C Non Resistant - After a short period of time the mechanical properties of the material are seriously affected.  
 O Dissolves  
 RT Room Temperature (23°C)  
 CA Commercially Available

CHEMICAL NAME	CONCENTRATION	TEMPERATURE	TEMPERATURE			
			PA6, PA66	POM C	POM H	PET
Formaldehyde (aq)	30	RT	B	A	A	A
Formaldehyde (gas)	100	RT	A	A	A	A
Formic Acid	2	RT	B	A		A
	2	100	C	C		
	100	RT	O	C	C	B
Fruit Juice	100	RT	A	A		A
Fuel Oil	CA	RT	A	A	A	A
Gas (Natural Gas)	CA	RT	A	A	A	A
Glycerine	UD	RT	A	A		A
Helium	100	RT	A	A	A	A
Heptane	100	RT	A	A	A	A
Hexane	100	RT	A	A	A	A
Hydraulic Oils	CA	RT	A	A	A	A
	CA	80	A	A		A
	CA	100	A	A		A
Hydrazine	100	RT	A			
Hydrobromic Acid	10	RT	C	C		C
Hydrochloric Acid	1	RT	B			
	2	RT	B	C		A
	2	100	C	C		
	10	RT	C	C	C	A
	10	60	C	C	C	B
	10	80	C	C	C	C
	20	RT	C	C	C	B
	20	100	C	C	C	C
	30	RT	O	C	C	C
Hydrofluoric Acid	5	RT	C	C		A
	5	60	C	C		B
	50	RT	C	C		C
Hydrogen	100	RT	A	A	A	A
Hydrogen Chloride	100	RT	C	C		C
Hydrogen Peroxide	1	RT	C	A	A	A
	30	RT	C	B	A	A
	50	RT	C	C	A	
	100	RT	C	C	C	
Hydrogen Sulphide (aq)	10	RT	A	A		A
Hydrogen Sulphide (gas)			B	B		B
Inert Gases	100	RT	A	A	A	A
Iodine	100	RT	C			
Isocyanate	100	RT	A	A		A
Isopropyl Alcohol	100	RT	A	A		B
Kerosene	CA	RT	A	A	A	A
	CA	60	A	A		A
	CA	85	A	A		A
Ketones (aliphatic)	100	RT	B	A		C
Lactic Acid	10	RT	A	A		A
	10	60		B		
	90	RT	C	A		
	90	60	C	C		
Lubricating Greases	CA	RT	A	A	A	A
	CA	110	A	A		A
Lubricating Oils	CA	RT	A	A	A	A
Magnesium Salts	10	RT	B	A		A

All information contained in this literature corresponds with our current knowledge of the products.  
 Nylocast assume no liability whatsoever in respect of application, conversion or use made of the aforementioned information or products, or any consequence thereof. The buyer undertakes all liability in respect of the application, conversion or use of the aforementioned information or products. Existing intellectual property rights must be observed and Nylocast reserve the right to make technical alterations.

CHEMICAL NAME	CONCENTRATION	TEMPERATURE	TEMPERATURE			
			PA6, PA66	POM C	POM H	PET
Methane	100	RT	A	A	A	A
Methyl Chloride	100	RT	B	B	A	C
Milk	CA	RT	A	A	A	A
Mineral Oils	CA	RT	A	A	A	A
Motor Oils HD	CA	130	A	A		A
Naphtha	CA	RT	A	A		A
Naphthalene	100	RT	A	A		A
Naphthalenesulphonic Acid	100	RT	C	C		
Nickel Salts	10	RT	A	A		
Nitric Acid	1	RT	B			A
	2	RT	C	C		A
	5	RT	C	C		A
	10	RT	C	C	C	A
	10	60	C	C	C	C
	50	RT	O	C	C	C
Nitrobenzene	100	RT	B	B		B
	100	80	C			
Nitrogen	100	RT	A	A	A	A
Nitromethane	100	RT	B			
Nitrotoluene	100	RT	B	B		A
Octane	100	RT	A	A		A
Octene	100	RT	A	A		A
Oils (Ethereal)	CA	RT	A	A	A	A
Oils (Mineral, Vegetable)	CA	RT	A	A	A	A
Oleic Acid	100	RT	A	A		A
Oleum	100	RT	O	C		C
Oxalic Acid	10	RT	B	C		A
	100	RT	C			
Oxygen	100	RT	A	A	A	A
Ozone	UD	RT	C	C		B
	20ppm	RT	B	B		A
Paraffin	CA	RT	A	A		A
Paraffin Oil	CA	RT	A	A	A	A
Petrol	CA	RT	A	A	A	A
	CA	65	A	A	A	A
	CA	80	A	A	A	A
Phenol	5	RT	C			
	75	RT	O			
	90	RT	O	C	C	C
Phosphoric Acid	1	RT	B			
	3	RT	C			A
	3	80	C			A
	10	RT	C	A	C	A
	25	RT	C	B	C	A
	25	60	C	C	C	A
	50	RT	C	C	C	A
	85	RT	O	C	C	B
	85	60	O	C	C	C
Propane	100	RT	A	A	A	A
Propene	100	RT	A	A	A	A
Propionic Acid	5	RT	A	A		A
	10	RT	C	B		A
	50	RT	C	C		

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CHEMICAL NAME	CONCENTRATION	TEMPERATURE	TEMPERATURE			
			PA6, PA66	POM C	POM H	PET
Propylene Alcohol	100	RT	A	A		A
	100	100	O			
Pyridine	UD	RT	A	B		B
	UD	80	B			
Resorcinol	UD	RT	C			C
Resorcinol in Ethanol	50	RT	O			C
Sodium Acetate	10	RT	A	A		A
Sodium Bicarbonate	10	RT	A	A		A
Sodium Carbonate	10	RT	A	A	A	A
Sodium Chloride	10	RT	A	A	A	A
Sodium Hydroxide	1	RT	A	A	B	A
	1	60	A	A	C	B
	10	RT	A	A	C	B
	10	80	C	A	C	C
	20	RT	A	A	C	
	20	100	C	A	C	C
	30	80	C	A	C	C
	50	RT	A	A	C	C
Sodium Hypochlorite	5	RT	B			
	10	RT	C	C		A
	30	RT	C	C		C
Steam	UD	>100	C	B		C
Sulphur Dioxide	100	RT	B	C		
Sulphuric Acid	1	RT	A	A	C	A
	5	RT	C	A	C	A
	10	RT	C	B	C	A
	10	60	C	C	C	A
	50	RT	C	C		C
	50	100	C	C		C
	80	RT	O	C	C	C
Tetrachloromethane	100	RT	A	B	A	A
	100	60	A	B	A	C
Toluene	100	RT	A	A	B	A
	100	50	A	A	B	
	100	65	A	A	C	
	100	100	A	A	C	C
Trichloroethane	100	RT	A	A		A
Trichloroethylene	100	RT	B	B	B	B
	100	60	C	B		
	100	80	C	C		C
Turpentine Oil	CA	RT	A	A	A	A
Urea	5	RT	A	A	A	A
Uric Acid	10	RT	A	A		A
Urine	100	RT	A	A		A
Vinegar	CA	RT	C	A		A
Vinyl Chloride	100	RT	A	A		A
White Spirits	CA	RT	A	A		A
Wine and Spirits	CA	RT	B	A		A
Zinc Chloride	5	RT	A	A	C	A
	10	RT	B	A	C	A
	40	RT	C	B	C	A
	40	RT	C		C	A
	50	100	C	C		C

**PTFE = Polytetrafluoroethylene**  
**A material with outstanding characteristics**

- Universal resistance to chemicals
- Temperature resistant in the range from -269 °C to +260 °C (briefly up to 300 C)
- Extremely good electrical insulation capacity
- Extremely good sliding properties, no stick-slip effect
- Anti-adhesive behaviour
- Physiologically safe
- Light and weather proof
- Does not absorb water
- Highly resistant to burning

The use of PTFE compounds is targeted towards optimising specific material characteristics, e.g. cold flow behaviour, wear resistance or electrical characteristics. The production of compounds in our company assures you of a wide selection of materials, plus flexibility.

Standard fillers: glass fibre, carbon, graphite, bronze, stainless steel. Other fillers, such as MoS<sub>2</sub>, conductive pigment, colouring pigments and organic fillers for special compounds are also available for your specific applications.

**A round trip with PTFE through industry:**

**Chemistry and plant construction**

- Sealing elements
- Compensators
- Linings
- Components

**Mechanical engineering**

- Hydraulic elements
- Bearings
- Seals

**Gas compressors**

- Seals and controls

**Pharmaceutical and food industries**

- Seals and bearings

**Medical engineering, analysis**

- Seals
- Functional elements

**Fittings and pumps**

- Seals
- Linings and components

**Building industry**

- Sliding components

**Vehicle construction**

- Sliding and sealing components
- Bearings

**Electrical engineering**

- Insulating components

**Semi-conductors**

- Structural elements
- Seals

We are your partners in developing and executing your individual requirements. Our production programme is geared to this:

**PTFE finished parts**

**Special sealing and structural elements**

- PTFE expansion bellows, individually designed, including valve or pump bellows
- Valve and ball seats for fittings
- Sliding elements
- Structural parts in accordance with your drawings and specimens

**Seals**

**Seals for static applications:**

- O-rings
  - solid PTFE
  - PTFE-coated elastomer O-rings
  - FEP and PFA-coated O-rings (Viton and silicone)
- Flat seals
  - made from PTFE
  - made from modified PTFE
  - PTFE-coated

**Dynamic sealing elements for hydraulics and pneumatics:**

- Compact piston and rod seals
- Driving rings and bands
- Bearing rings
- Lip seals, lip rings, V-rings, wiper rings
- Sets of roof sleeves
- Cup leathers
- Rotary shaft seals

**Dynamic sealing elements made from PTFE special compounds for compressors:**

- Piston sealing rings
- Driving bands
- Piston rod seals

**PTFE semi-finished products**

- Moulded panels, rods and tubes
- Ram-extruded rods and tubes
- Skived sheets
- PTFE-coated glass cloth sheets
- PTFE tubing
- PTFE sealing tape / profile
- PTFE flat packing tape

**The PTFE fillers**



Fillers	Quantity (% by weight)	Effect of filler
Glass fibre	5 – 25%, max. 40% Also in combination with graphite, carbon and molybdenum disulphide	+ Higher compressive strength, rigidity and resistance to wear + Reduction in cold flow + Resistant to organic solvents - Not resistant to alkalis and acids
Carbon (electro-graphitised)	5 – 25%, max. 35% Also in combination with graphite, bronze and molybdenum disulphide	+ Higher compressive strength and resistance to wear + Good dry-running properties + Greater hardness + Improved thermal conductivity + Elec. conductivity when heavily filled + Resistant to hydrofluoric acid - Can be corroded by strong oxidizing media (acids, alkalis, halogens)
Bronze	Up to 60% filler Also in combination with graphite, carbon and molybdenum disulphide	+ Higher compressive strength and resistance to wear + Greater hardness + Improved thermal conductivity + Reduction in cold flow - Only limited resistance to chemicals - Can be corroded by alkalis and strong oxidizing acids
Graphite	Up to 15% Also in combination with glass, bronze and carbon	+ Improved sliding properties and thermal conductivity + Lower coefficient of friction + Less abrasion when running on soft, metallic surfaces - Can be corroded by strong oxidizing media (acids, alkalis, halogens)
Molybdenum disulphide (MoS <sub>2</sub> )	Up to 5% Also in combination with glass and bronze	+ Improved sliding properties + Improved resistance to wear - Can be corroded by strong oxidizing media (acids, alkalis, halogens)
Stainless steel	Up to 60%	+ Improved thermal conductivity + Reduction in cold flow - Largely resistant to chemicals



**Exclusion of liability:**

All information contained in this literature corresponds with our current knowledge. It does not constitute a legally binding guarantee, final decisions as to the suitability of a product for a particular purpose are for the customer. Nylacast assume no liability in respect of application, conversion or use made of the information or the products, or any consequence thereof. Should any liability be incurred by us, this shall be limited to the value of the products supplied. Products described herein are not destined for use in human implant applications. Nylacast reserve the right to make technical alterations. Nylacast reserve the right to make technical alterations. Existing intellectual property rights must be observed.

		Machining Guidelines		NYLACAST PA	NYLACAST POM	NYLACAST PET	GLASS REINFORCED POLYAMIDES
TURNING		<p><b>TURNING</b></p> <ul style="list-style-type: none"> <li><math>\alpha</math> Side Relief Angle °</li> <li><math>\gamma</math> Rake Angle °</li> <li><math>\eta</math> Side Cutting Edge Angle °</li> <li><math>v</math> Cutting Speed m/min</li> <li><math>s</math> Feed mm/rev</li> <li>Peak Radius <math>r</math> to be min. 0.5mm</li> </ul>	$\alpha$ 6 - 10	6 - 8	5 - 10	6 - 8	
			$\gamma$ 0 - 5	0 - 5	0 - 5	2 - 8	
			$\eta$ 45 - 60	45 - 60	45 - 60	45 - 60	
			$v$ 200 - 500	300 - 600	300 - 400	150 - 200	
			$s$ 0.1 - 0.5	0.1 - 0.4	0.2 - 0.4	0.1 - 0.5	
MILLING		<p><b>MILLING</b></p> <ul style="list-style-type: none"> <li><math>\alpha</math> Relief Angle °</li> <li><math>\gamma</math> Rake Angle °</li> <li><math>v</math> Cutting Speed m/min</li> <li><math>s</math> Feed mm/tooth</li> </ul>	$\alpha$ 10 - 20	5 - 15	5 - 15	5 - 30	
			$\gamma$ 5 - 15	5 - 15	5 - 15	6 - 10	
			$v$ 250 - 500	250 - 500	250 - 300	80 - 100	
			$s$ <0.05	<0.05	<0.05	<0.05	
			$v$ 250 - 500	250 - 500	250 - 300	80 - 100	
DRILLING		<p><b>DRILLING</b></p> <ul style="list-style-type: none"> <li><math>\alpha</math> Side Relief Angle °</li> <li><math>\gamma</math> Rake Angle °</li> <li><math>\phi</math> Top Angle °</li> <li><math>v</math> Cutting Speed m/min</li> <li><math>s</math> Feed mm/rev</li> </ul>	$\alpha$ 15 - 15	5 - 10	5 - 10	6 - 10	
			$\gamma$ 10 - 20	15 - 30	10 - 20	5 - 10	
			$\phi$ 90	90	90	120	
			$v$ 50 - 150	50 - 200	50 - 100	80 - 100	
			$s$ 0.1 - 0.3	0.1 - 0.3	0.2 - 0.3	0.1 - 0.3	
BELT SAW		<p><b>BELT SAW</b></p> <ul style="list-style-type: none"> <li><math>\alpha</math> Relief Angle °</li> <li><math>\gamma</math> Rake Angle °</li> <li><math>t</math> Pitch mm</li> <li><math>v</math> Cutting Speed m/min</li> </ul>	$\alpha$ 25 - 40	25 - 40	25 - 40	25 - 40	
			$\gamma$ 0 - 8	0 - 8	0 - 8	0 - 8	
			$t$ 4 - 10	4 - 10	4 - 10	4 - 6	
			$v$ 50 - 500	50 - 500	50 - 400	50 - 200	
			$v$ 50 - 500	50 - 500	50 - 400	50 - 200	
CIRCULAR SAW		<p><b>CIRCULAR SAW</b></p> <ul style="list-style-type: none"> <li><math>\alpha</math> Relief Angle °</li> <li><math>\gamma</math> Rake Angle °</li> <li><math>t</math> Pitch mm</li> </ul>	$\alpha$ 10 - 15	10 - 15	10 - 15	10 - 15	
			$\gamma$ 0 - 15	0 - 15	0 - 15	0 - 15	
			$t$ 8 - 45	8 - 45	8 - 25	8 - 25	
			$t$ 8 - 45	8 - 45	8 - 25	8 - 25	
			$t$ 8 - 45	8 - 45	8 - 25	8 - 25	