

ERTALON® Extruded Products

Polyamides (PA)

Main Characteristics:

- High mechanical strength, stiffness, hardness and toughness
- Good fatigue resistance
- Excellent resilience
- High mechanical damping ability
- Good sliding properties
- Excellent wear resistance
- Good electrical insulating properties
- Good resistance to high energy radiation (gamma and X rays)
- Good machinability

Within the Polyamides, commonly referred to as 'nylons', we distinguish different types. The most important ones are: PA6, PA66, PA11 and PA12.

The differences in physical properties which exist between these types are mainly determined by the composition and the structure of their molecular chains.

ERTALON® 66GF30

(PA66+GF30)

Colour: Black

Compared with virgin PA66, this 30% glass fibre reinforced and heat stabilised nylon grade offers increased strength, stiffness, creep resistance and dimensional stability whilst retaining an excellent wear resistance. It also allows higher max. service temperature.

ERTALON® 66SA

(PA66)

Colours: Natural (cream) and Black

Material with a higher mechanical strength, stiffness, heat and wear resistance than ERTALON® 6SA. It also has better creep resistance but its impact strength and mechanical damping ability are reduced. Well suited for machining on automatic lathes.

ERTALON® 6SA

(PA6)

Colours: Natural (white) and Black

This material offers an optimal combination of mechanical strength, stiffness, toughness, mechanical damping properties and wear resistance. These properties, together with a favourable electrical insulating ability make ERTALON® 6SA a "general purpose" grade for mechanical construction and maintenance.

ERTALON® 4.6

(PA4.6)

Colour: Reddish brown

Compared with the conventional nylons, ERTALON® 4.6 (Stanyl®) features a better retention of stiffness and creep resistance over a wide range of temperatures as well as a superior heat ageing resistance. Therefore, applications for ERTALON® 4.6 are situated in the "higher temperature area" (80 - 150°C) where stiffness, creep resistance, heat aging resistance, fatigue strength and wear resistance of PA6, PA66, POM and PET fall short.

ERTALON® 66SA Nylon 66 (PA66)

In comparison to ERTALON® 6SA, ERTALON® 66SA has a higher melting point, better mechanical properties and greater toughness. Because of its lower water absorption, it is more suited for components that have to meet tighter tolerances.

- High impact strength
- High mechanical damping
- Good alkaline resistance (up to pH 12)
- High strength / stiffness
- Good fatigue resistance
- Good UV resistance
- Excellent wear resistance
- Continuous temperature 80°C (max 180°C)

Common Applications:

Gears; Bearings; Rollers; Wheels; Cams; Nuts; Valve seats; Pulleys; Gaskets; Electrical insulators.

Delivery Programme

	min	max
Rod 1m & 3m long diameter (mm)	5.0	250
Tube 1m & 3m long outer diameter (mm)	20	100
inner diameter (mm)	10	80
Coiled Strip length dependent on thickness		
width (m)	25.4	101.6
thickness (mm)	0.25	3.18
Sheet 1m & 2m long		
width (m)	1.0	
thickness (mm)	2.0	6.0
Plate 1m & 3m long		
width (mm)	610	
thickness (mm)	8.0	100
Colours: Natural (cream) and Black		

Technical Specification

Property	ISO Method	Units	Values
Density	1183	g/cm ³	1.14
Water absorption			
· Saturation in air (23°C/50% RH)	~	%	2.40
· Saturation in water (23°C)	~	%	8.00
Tensile strength* ¹	527	N/mm ²	90
Tensile modulus of elasticity* ¹	527	N/mm ²	3450
Elongation at break* ¹	527	%	>40
Impact - Charpy* ¹	179/1eU	kJ/m ²	no break
Impact - Izod notched* ¹	180/2A	kJ/m ²	4.5
Hardness	Rockwell	~	M88
	Shore D	~	~
Melt point	~	°C	255
Max allowable service temperature in air			
· for short periods	~	°C	180
· continuously for 20,000 hrs	~	°C	80
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	8.0
Thermal conductivity	~	W/(K.m)	0.28
Flammability* ² (6mm thickness)	~	~	V-2
Volume resistivity* ¹	IEC93	Ω.cm	>10 ¹⁴
Dielectric strength* ¹	IEC243	kV/mm	27
Outside applications			
· UV resistance	~	~	A/B
Acids - strong (pH<3)	~	~	C
Alkalis - strong (pH>11)	~	~	B/C
Chlorinated hydrocarbons	~	~	A/B
Hot water	~	~	B

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

*¹ - Measured on dry test specimens (where applicable)

*² - Tests completed by DSM EPP using UL test methods

ERTALON® 6SA Nylon Grade 6 (PA6)

ERTALON® 6SA is a partially crystalline polyamide with good strength, toughness, and resilience. This is particularly important under impact loading or at low temperatures.

- High impact strength
- High mechanical damping
- Good alkaline resistance (up to pH 12)
- High strength / stiffness
- Good fatigue resistance
- Good UV resistance
- Excellent wear resistance
- Continuous temperature 70°C (max 160°C)

Common Applications:

Gears; Bearings; Rollers; Wheels; Cams; Nuts; Valve seats; Pulleys; Gaskets; Electrical insulators.

Delivery Programme

	min	max
Rod 1m & 3m long diameter (mm)	5.0	320
Tube 1m & 3m long outer diameter (mm)	20	100
inner diameter (mm)	10	80
Coil width (m)	1.0	
thickness (mm)	0.5	1.5
Sheet 1m & 2m long width (m)	1.0	
thickness (mm)	1.0	8.0
Plate 1m & 3m long width (mm)	610	
thickness (mm)	8.0	100
Colours: Natural (white) and Black		

Technical Specification

Property	ISO Method	Units	Values
Density	1183	g/cm ³	1.14
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	2.60
• Saturation in water (23°C)	~	%	9.00
Tensile strength* ¹	527	N/mm ²	76
Tensile modulus of elasticity* ¹	527	N/mm ²	3250
Elongation at break* ¹	527	%	>50
Impact - Charpy* ¹	179/1eU	kJ/m ²	no break
Impact - Izod notched* ¹	180/2A	kJ/m ²	5.5
Hardness	Rockwell	~	M85
	Shore D	~	~
Melt point	~	°C	220
Max allowable service temperature in air			
• for short periods	~	°C	160
• continuously for 20,000 hrs	~	°C	70
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	9.0
Thermal conductivity	~	W/(K.m)	0.28
Flammability* ² (6mm thickness)	~	~	HB
Volume resistivity* ¹	IEC93	Ω.cm	>10 ¹⁴
Dielectric strength* ¹	IEC243	kV/mm	25
Outside applications			
• UV resistance	~	~	A/B
Acids - strong (pH<3)	~	~	C
Alkalis - strong (pH>11)	~	~	B/C
Chlorinated hydrocarbons	~	~	A/B
Hot water	~	~	B

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ERTALON® 4.6 Stanyl (PA4.6)

Compared with conventional nylons, ERTALON® 4.6 features a better retention of stiffness and creep resistance over a wider temperature range, as well as having superior wear and heat aging resistance.

- Good chemical resistance (pH 5 - 11)
- Good fatigue resistance
- Good UV resistance
- High strength / stiffness
- High impact strength
- High mechanical damping ability
- Excellent wear resistance
- Continuous temperature 135°C (max 200°C)

Common Applications:

Sealing rings for hydraulic equipment; Gears; Camplates; Hydraulic brake pistons; Electrical coil cores.

Delivery Programme

	min	max
Rod 1m & 3m long diameter (mm)	5.0	60
Plate 1m & 3m long width (mm)	500	
thickness (mm)	50	50
Plate 1m & 3m long width (mm)	610	
thickness (mm)	10	40
Colour: Reddish brown		

Technical Specification

Property	ISO Method	Units	Values
Specific gravity	1183	g/cm ³	1.18
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	2.80
• Saturation in water (23°C)	~	%	9.50
Tensile strength* ¹	527	N/mm ²	100
Tensile modulus of elasticity* ¹	527	N/mm ²	3300
Elongation at break* ¹	527	%	25
Impact - Charpy* ¹	179/1eU	kJ/m ²	no break
Impact - Charpy notched* ¹	179/1eA	kJ/m ²	8
Hardness	Rockwell	~	M92
	Shore D	~	~
Melt point	~	°C	295
Max allowable service temperature in air			
• for short periods	~	°C	200
• continuously for 20,000 hrs	~	°C	135
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	8.0
Thermal conductivity	~	W/(K.m)	0.30
Flammability* ² (6mm thickness)	~	~	HB
Volume resistivity* ¹	IEC93	Ω.cm	>10 ¹⁴
Dielectric strength* ¹	IEC243	kV/mm	25
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	C
Alkalis - strong (pH>11)	~	~	B/C
Chlorinated hydrocarbons	~	~	A
Hot water	~	~	B

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ERTALON® 66GF30

Nylon 66 + 30% Glass Filled (PA 66+GF30)

Compared to un-reinforced nylon 66, this 30% glass fibre filled grade offers increased strength and stiffness, with much better creep resistance and dimensional stability. It also offers a higher continuous service temperature. The overall combination of properties makes it ideal for static, structural applications.

- Very high strength / stiffness
- Good dimensional stability
- Good alkaline resistance (up to pH 11)
- Continuous temperature 110°C (max 240°C)
- Excellent creep resistance
- Excellent wear resistance
- Excellent electrical insulator

Common Applications:

Gears; Bearings; Rollers; Wheels; Cams; Nuts; Valve seats; Pulleys; Gaskets; Electrical insulators.

Delivery Programme

	min	max
Rod 1m & 3m long diameter (mm)	8.0	200
Plate 1m & 3m long width (mm)	625	
thickness (mm)	10	100
Colour: Black		

Technical Specification

Property	ISO Method	Units	Values
Density	1183	g/cm ³	1.29
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	5.50
• Saturation in water (23°C)	~	%	1.70
Tensile strength* ¹	527	N/mm ²	100
Tensile modulus of elasticity* ¹	527	N/mm ²	5900
Elongation at break* ¹	527	%	5
Impact - Charpy* ¹	179/1eU	kJ/m ²	>50
Impact - Izod notched* ¹	180/2A	kJ/m ²	6
Hardness	Rockwell	~	M76
	Shore D	~	~
Melt point	~	°C	255
Max allowable service temperature in air			
• for short periods	~	°C	240
• continuously for 20,000 hrs	~	°C	110
Linear thermal expansion coefficient	~	K ⁻¹ x 10 ⁻⁵	5.0
Thermal conductivity	~	W/(K.m)	0.30
Flammability* ² (6mm thickness)	~	~	HB
Volume resistivity* ¹	IEC93	Ω.cm	>10 ¹⁴
Dielectric strength* ¹	IEC243	kV/mm	30
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	C
Alkalis - strong (pH>11)	~	~	B/C
Chlorinated hydrocarbons	~	~	A/B
Hot water	~	~	B

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

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*² - Tests completed by DSM EPP using UL test methods