CNC MACHINING
PA66 (Nylon) | GF30 | UV
### UV and weather resistant

PRODUCT DESCRIPTION

Polymers are produced by the repeated joining of two groups to form an amide linkage. The condensation reaction is used to synthetically produce nylon polymers. A range of polyamides can be produced, each with differing characteristics, for example PA66 has a higher tensile strength than PA6. This grade has been re-enforced with glass fibres - and the composite inherits good strength, hardness and abrasion resistance from the 30% glass filler, and tough and lightweight properties of the plastic.

APPLICATIONS

Gears, conveyors, wheels, rollers and power transfer. Automotive and heavy industry.

Agriculture and farming equipment.

Sports equipment, garden tools and enclosures. Nylon is most widely used to produce fabric, but also makes a versatile engineering plastic.
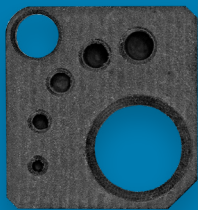
KEY PRODUCT BENEFITS

- High mechanical strength, stiffness, hardness and toughness
- High heat deflection temperature
- Excellent wear properties
- Good sliding properties
- Resistant to fatigue and creep
- Resistant to many solvents

ALTERNATIVES

Nylons absorb water - this can result in dimensional changes. POM-C will provide similar properties, and is more dimensionally stable in humidity. When CNC cutting the glass fibres will be exposed on the surface (this differs from the surface finish produced by injection moulding). PA6 is more recyclable, and in general glass filled products are harder to recycle. Few (uncoated) plastics are UV stable, so for use in sunlight PA66 is an excellent choice.

TRADE NAME(S) SUPPLIED*

TECAMID ® 66 GF30 or ERTALON ® 66 GF30

https://www.ensingerplastics.com/en-gb/shapes/products/pa66-tecamid-66-gf30-black

https://www.protolabs.co.uk/media/04cb0pqt/mcam_01805_gep_ertalon-66-gf30-pa66_nylatron-gf30-pa66_pds_en-us.pdf

COMMONLY USED TRADE NAMES

Zytel® from DuPont, Technyl® from Solvay, Rilsan® and Rilsamid® from Arkema, Radipol® from Radici Group

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PROPERTIES

MECHANICAL PROPERTIES*	VALUE	UNITS
Colour	Black	
Density	1.3	g/cm³ (Specific)
Ultimate Tensile Strength (at break)	90	MPa
Tensile yield strength	90	MPa
Modulus of elasticity in tension (Young's Modulus)	5000	MPa
Hardness	76	MPa Rockwell M
Elongation at yield	8	%
Elongation at break	14	%
Unnotched impact strength (Charpy)	50	kJ/m²
Notched impact strength ASTM D256 (Charpy)	6	kJ/m²
Water absorption (plastic) / corrosion (metal)	0.3	%

THERMAL PROPERTIES*	VALUE	UNITS
Melting temperature	260	°C
Heat deflection (plastic) or service temp (metal)	150	°C
Thermal conductivity	0.35	W/(K*m)
Coefficient of thermal expansion	50	×10^{-6}/K (μm/m/°C)
Flammability (UL 94)	HB	UL 94 classification

ELECTRICAL PROPERTIES*	VALUE	UNITS
Specific surface resistivity	>10^{13}	Ω
Specific volume resistivity	>10^{13}	Ω*cm
Dielectric strength	30	kV/mm

MACHINING PROPERTIES*	VALUE	UNITS
Machinability rating	16 – GF may distort	Metal AISI Plastic 1-20
Protolabs general tolerance	± 0.1	mm
Relative material cost	£££	Per unit weight
Recyclability	-	EU RIC codes
Basic safety information #	Refer to SDS	Refer to SDS

A limited summary, refer to the Safety Data Sheet (SDS) for comprehensive instruction. Available on request.

PROPERTIES CODES

ESD Electrostatic dissipative
FR Flame retardant (UL 94 V-0)
TR Transparent (only when polished)

FDA Food and drug administration / food safe
GF Glass filled (% by weight)
UV Ultraviolet (sun) light and weather resistant

* All materials are purchased from audited major suppliers, to ensure consistent properties and quality. More than one supplier may be used, for identical grades, in which case we can not offer a specific choice. All properties are average/approximate, for specific ranges refer to the following suppliers data sheets. Protolabs makes no warranties regarding the content, and excludes liability for any inaccuracies in this document.