PERLON®
The Filament Company

Resins in comparison

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Perlon® – The Filament Company – is an innovative, global group of companies specialized in the manufacture of synthetic filaments. Perlon® generates annual sales of about 135 million euros, employs more than 850 people and has a production capacity of over 20,000 tons. We operate from locations in Germany, in the USA and in China.

Through our technical expertise and strength in innovation we develop premium quality products for our customers. The comprehensive product portfolio is based on a variety of raw materials. In line with the intended application, these are modified and processed into high quality, application-specific filaments. The consistent high quality of our products sets worldwide benchmarks.

Within the Perlon® QualiFil product range, we offer a wide array of monofilament produced from different polymers for use in the Paper Machine Clothing (PMC) and Advanced Technical Textiles (ATT) fields. Different polymer types can be used depending on the area of application. As to which polymer is the right one for your application, depends on the profile requirements of the end product. We are happy to offer advice.

Polyethylenterephthalate (PET) is one of the most important polyesters and belongs to the polycondensates family. PET is a semi crystalline thermoplastic and has a high strength and stiffness as well as good abrasion resistance. PET is very versatile and through the addition of additives easily modified. PET has only average electrical insulating properties and is not hydrolysis resistant. PET can easily be coloured.

Polyamides are thermoplastics which means they are malleable once exposed to heat and melt when heated. In general, they are colourless or yellowish, transparent to opaque and have no characteristic smell or taste. They have a very smooth surface, dry quickly, are very tough and tear resistant and have a relatively high resistance to water, diluted acids and organic solutions. As with all polymers, they are poor conductors of heat and are electrical insulators.

Polyolefines are saturated hydrocarbons which are produced through polymerisation. They are semi crystalline thermoplastics, which are easy to process. Generally polyolefines are plasticizer free, physiologically harmless and cheaper to produce and are suitable for use in the food industry. They are characterised by good chemical resistance and electrical insulation properties.

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	Polyethylenterephthalate*	Polyamide	Polyolefines***
Abbreviation	PET	PA 6 / PA6.6	PP
Density [g/cm³]	1,39	1,14	0,90
Continuous working temperature[°C]	-30 to 140	-25 to 120 **	-15 to 100
Short term working temperature [°C]	200	180 (PA6) – 200 (PA6.6) **	130
Glass transition temperature [°C]	73 – 79 (DTA)	35 – 90 ** (depending on moisture absorption)	-25 bis -5
Crystallisation temperature [°C]	255 – 258	215 – 265 **	160 – 170
Moisture absorption [%] (24h, ASTM D570)	0,10	8,00 – 10,00 ** (23°C, saturated)	< 0,02 (normal climate)
Resistance to acids (20°C)	Good resistance.	Not resistant to strong acids.	Resistant to weak and strong acids. Not resistant to oxidising acids.
Resistance to alkaline (20°C)	Not resistant to strong alkaline.	Good resistance.	Resistant to weak and strong alkaline.
Resistance to organic solvents	Resistant to aliphatic and aromatic hydrocarbons. As well as alcohols and carbon tetra chloride. Not resistant to carbolic acid and hot water.	Resistant to aliphatic and aromatic hydrocarbons, some alcohols, ketones, ester and ether.	Resistant to ethanol and water. Partial or non-resistance to aliphatic and aromatic hydrocarbons as well as chlorinated hydrocarbons.
Flammability	Burns with sooty yellowy orange flames and smells sweet and aromatic.	Burns with yellowy orange flames with blue outer edge. They burn after the flames have been extinguished and smell of singed hair.	Burns with glowing flames and smells of extinguished candles.
LOI Value	23 – 25	21 – 27 **	17 – 18
Mechanical properties/ special characteristics	Semi crystalline: properties are dependent on crystallinity: high stability, good abrasion resistance, high young's modulus (dimensional stability). Hydrophobic: i.e. no effect from moisture on the textile properties. Hydrolytic degradation possible at high temperatures, can be coloured, good UV resistance. Hydrolytic degradation possible at high temperatures, dye able, good UV resistance.	Semi crystalline: i.e. properties are dependent on crystallinity, very high resistance and very good abrasion resistance, medium young's modulus. The properties are dependent on moisture (soft through water absorption).	Low electrostatic charge, very low thermal conductivity, insulating, can be coloured, not resistant to UV light.

* PBT has similar properties.

** Dependent on base polymer PA6 or PA6.6

*** PE has similar properties.

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