

## Brief Introduction of PPA Materials

PPA (Polyphthalamide) polyphthalamide has 20% higher tensile strength than nylon 6 and 66 at high temperature and humidity, 20% higher bending modulus and hardness than nylon, which can resist long-term tensile creep, and has better gasoline, grease and coolant resistance than PA. Winnylon, this material can withstand the continuous high temperature of 200 C, and maintain good dimensional stability.

### I. Characteristics:

1. Superior properties of strength, toughness and hardness, as well as good heat-resistant parts, chemical resistance and cracking resistance
2. Because the strength and hardness can still be maintained under high temperature and humidity, the metal can be replaced by nylon and polyester which can not be easily used.
3. Plastics also have superior surface gloss. It can be colored to avoid surface spraying, thus helping to reduce the visibility of scratches and scratches on the surface.
4. Plastics also have good machinability and allow short injection cycle time.

Application:

1. Automotive components, including fuel, transmission and engine systems, can reduce weight, reduce costs and provide long service life.
2. Chip group and socket, cup welding support;
3. Flake capacitors, switches and miniature horns, making high density PCB connectors;
4. Used in situations with high wear resistance requirements, such as non-lubricated bearings, seals, bearing isolation rings and reciprocating compressor parts;
5. Connectors, controllers, sensors, motors and other key electronic components

## **Introduction of PC Materials**

Polycarbonate (PC) is a macromolecule polymer containing carbonate group in molecular chain. According to the structure of ester group, PC can be divided into aliphatic, aromatic, aliphatic-aromatic and other types. The application of aliphatic and aliphatic-aromatic polycarbonates in engineering plastics is limited because of their low mechanical properties.

### **Main advantages:**

1. It has high strength and elastic coefficient, high impact strength and wide use temperature range.
2. High transparency and free dyeing;
3. Low shrinkage and good dimensional stability.
4. Good fatigue resistance;
5. Good weather resistance;
6. Excellent electrical characteristics.

### **Application:**

1. Automobile Manufacturing Industry

Polycarbonate has good impact resistance, thermal distortion resistance, good weather resistance and high hardness, so it is suitable for producing various parts of cars and light trucks. It mainly concentrates on lighting

system, dashboard, heating board, defroster and bumper made of polycarbonate alloy.

## 2. Medical Devices

Polycarbonate products are widely used in artificial kidney hemodialysis equipment and other medical equipment which need to be operated under transparent and intuitive conditions and repeatedly disinfected because they can withstand steam, cleaning agent, heating and high dose radiation disinfection without yellowing and physical performance degradation. Such as the production of high-pressure syringes, surgical masks, disposable dental appliances, blood separators and so on.

## 3. Aerospace

With the rapid development of Aeronautics and aerospace technology, the requirements for various components of aircraft and spacecraft are constantly increasing, which makes the application of PC in this field increasingly increasing. According to statistics, the number of polycarbonate components used on a single Boeing aircraft is 2,500, and the consumption of polycarbonate on a single aircraft is about 2 tons. On the spacecraft, hundreds of different configurations of glass fiber reinforced polycarbonate components and astronauts' protective equipment were used.

## 4. Electronic Industry

Because polycarbonate has good and constant electrical insulation in a

wide range of temperature and humidity, it is an excellent insulating material. At the same time, its good flame retardancy and dimensional stability make it a wide range of applications in the electronic and electrical industry.

## 5. Optical Lens

Polycarbonate occupies an extremely important position in this field because of its unique characteristics such as high transmittance, high refractive index, high impact resistance, dimensional stability and easy processing and moulding. Optical lenses made of optical grade polycarbonate can be used not only for cameras, microscopes, telescopes and optical testing instruments, but also for film projector lenses, photocopier lenses, infrared auto-focusing projector lenses, laser beam printer lenses, prisms, multifaceted mirrors and many other office equipment. And in the field of household appliances, its application market is very broad.