

Introduction of LCP Material

LCP material is a new type of polymer material, which generally exhibits liquid crystal properties in melting state.

Material advantages:

LCP advantages.

1. High liquidity
2. Good dimensional stability
3. Excellent liquidity
4. Solvent Resistance
5. High mechanical strength
6. Flammability

LCP uses.

1. Speed connectors, coils, switches, sockets
2. Pump Parts and Valve Parts
3. Automotive Fuel Peripheral Parts
4. Containers for Electronic Furnace

Poor mechanical properties perpendicular to flow direction

Material properties:

These materials have excellent heat resistance and processing properties. The main method of polymerization is melt polycondensation. In recent years, the technology of continuous melt polycondensation to produce high molecular weight LCP has been developed. The liquid crystal aromatic polyester is oriented in liquid crystal state because of its macromolecular chain. It has unusually regular fibrous structure, special properties and high strength products, not inferior to metals and ceramics. Tensile strength and flexural modulus of thermoplastic engineering plastics have been developed for more than 10 years. Mechanical properties, dimensional stability, optical properties, electrical properties, chemical resistance, flame retardancy, processability are good, heat resistance is good, thermal expansion coefficient is low. The properties, processability and price of the liquid crystal polyester prepared by different monomers are also different. The different fillers and the different amount of fillers also affect its performance.

Main uses:

- 1) It has high strength, high rigidity, high temperature resistance and electrical insulation, and is used in the fields of electronics, electricity, optical fibers, automobiles and astronautics.
- 2) The fibers made of liquid crystal can be used as fishnet, bullet-proof clothing, sports

goods, brake pads, optical fibers and other display materials. They can also be made into films for soft printed circuits, food packaging, etc.

3) Used in microwave oven container, it can withstand high and low temperature. LCP can also be used for printed circuit boards, satellite electronic components, jet engine parts, electrical and automotive machinery parts or components, and also for medical purposes.

4) High filler can be added as IC packaging material to replace epoxy resin as coil skeleton packaging material; as fiber optic cable joint sheath and high strength components; as a substitute for filler material in ceramic separation tower.

5) Alloys can be made by blending with plastics such as polysulfone, PBT and polyamide. The mechanical strength of the parts is high after forming. It can be used to replace glass fiber reinforced plastics such as polysulfone. It can not only improve the mechanical strength, but also improve the use strength and chemical stability. At present, the application of LCP in outer panel of spacecraft and braking system of automobile is being studied.

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.