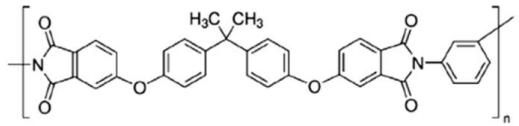
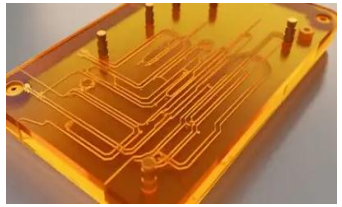
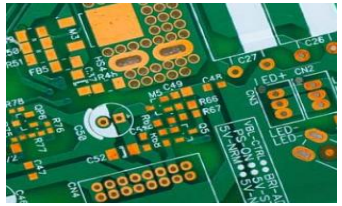
# Polyetherimide (PEI)



PEI-VAT002 & PEI VAT002HF is a general-purpose, unreinforced, amorphous amber-colored polyetherimide (PEI) resin with a glass transition temperature (Tg) of 217°C. It offers high heat resistance, high strength, and high modulus, along with broad thermal stability. Without the addition of any additives, it naturally exhibits flame retardancy and low smoke emission, with an oxygen index of 47% and a UL94 V-0 flammability rating. It has a heat deflection temperature (HDT) of 220°C and can be used continuously in operating temperatures ranging from -160°C to 180°C.

| Application | Application example | Key benefit |
|---|---|---|
| Medical & Life Sciences | Surgical tool handles<br>Sterilizable trays<br>Dental devices | Autoclavable<br>Biocompatible<br>Chemical resistant |
| Aerospace & Defense | Ducts & brackets<br>Wire insulation<br>Interior parts | Flame retardant<br>Lightweight<br>FAA compliant |
| Automotive | Sensor housings<br>EV battery insulation<br>Lighting modules | High heat resistance<br>Electrical insulation |
| Electronics & Electrical | PCB substrates<br>LED reflectors<br>Connectors | Dielectric stability<br>Precision molding |
| Consumer Goods | Microwave cookware<br>Plumbing fittings | Food-safe grades<br>Hydrolytic stability |
| Industrial | Semiconductor carriers<br>Chemical tank linings | Dimensional stability<br>Chemical resistance |





| Physical properties | unit | Test standard | VAT002 | VAT002HF | VAT002G10 | VAT002G30 |
|---|---|---|---|---|---|---|
| Density | g/cm³ | ISO 1183 | 1.27 | 1.27 | 1.3 | 1.51 |
| Mould Shrinkage | % | ISO 2577, 294-4 | 0.5~0.7 | 0.5~0.7 | 0.3~0.5 | 0.2~0.4 |
| Melt Flow Rate（337℃，6.7Kg） | g/10min | ASTM D1238 | 6~10 | 10~15 | 5~6 | 5~6 |
| **Mechanical Properties** | | | | | | |
| Tensile stress (50mm/min) | MPa | ASTM D638 | 110 | 110 | 110 | 170 |
| Tensile modulus （1mm/min） | MPa | ASTM D638 | 3500 | 3200 | 4500 | 9300 |
| Elongation at Break(23℃) | % | ASTM D638 | 55 | 55 | 6 | 2.5 |
| Flexural Modulus (23℃) | MPa | ASTM D790 | 3500 | 3300 | 4400 | 8800 |
| Flexural Strength at break | MPa | ASTM D790 | 160 | 155 | 185 | 240 |
| Charpy Impact | kj/m² | GB/T1843 | 7 | 6 | 7 | 9 |
| **Thermal Properties** | | | | | | |
| HTD 1.82Mpa | ℃ | ASTM D648 | 202 | 202 | 205 | 205 |
| CLTE (MD/TD) | ppm/K | ASTM E831-19 | 48/51 | 48/51 | 2.5/2.5 | 2.5/2.5 |
| Glass Transition Tempreture | ℃ | GB/T 19466.2-2004 | 217 | 217 | 217 | 217 |
| Electrical properties | | | | | | |
| Dielectric Strength(Air, 1.6mm) | KV/mm | IEC 60243-1 | 21.1 | 32 | 25 | 25 |
| Dielectric Constant(1 MHZ) | - | IEC 60250 | 3.1 | 3 | 3.5 | 3.5 |
| Dissipation Factor(1MHZ) | E-4 | IEC 60250 | 0.0017 | 0.006 | 0.0045 | 0.0045 |
| Volume resistivity(100V) | Ω ·cm | IEC 60093 | 1016' | 1016' | 1015' | 1015' |
| Surface resistivity(100V) | Ω | IEC 60093 | >1016' | >1016' | 1015' | 1015' |
| Injection Moulding conditions | | | | | | |
| Pre-Dry Temp/Time | | | 160℃ / >6h | | 150℃ /4h-6h | 150℃ /4h-6h |
| Mold Temp. | | | 130℃~180℃ | | 130℃~180℃ | 140℃~180℃ |
| Nozzle Temp. | | | 330℃~400℃ | | 330℃~400℃ | 345℃~400℃ |
| Front Temp | | | 345℃~400℃ | | 345℃~400℃ | 345℃~400℃ |
| Middle | | | 340℃~400℃ | | 340℃~400℃ | 340℃~400℃ |
| Rear Temp. | | | 325℃~400℃ | | 325℃~400℃ | 330℃~400℃ |