

## IMIDIZED

High Performance  
High Temperature  
High Cost

**Key Characteristics**  
Excellent dimensional stability  
Excellent electrical properties  
Excellent physical properties above 400°F/205°C  
Low coefficient of friction (bearing grades)  
Very high cost per pound

**Materials**  
Polyamide-Imide (PAI)  
Polybenzimidazole (PBI)  
Polyimide (PI)

### AMORPHOUS HIGH PERFORMANCE THERMOPLASTICS

**Key Characteristics**  
High cost  
High strength and good stiffness  
High temperature  
Hot water and steam resistance

**Materials**  
Polyarylate (PAR)  
Polyetherimide (PEI)  
Polyethersulfone (PES)  
Polyphenylsulfone (PPSU)  
Polysulfone (PSU)

### SEMI-CRYSTALLINE HIGH PERFORMANCE THERMOPLASTICS

**Key Characteristics**  
Good chemical resistance  
Good electrical properties  
Good toughness  
High cost  
High strength  
High temperature  
Low coefficient of friction (COF)

**Materials**  
Ethylene-Chlorotrifluoroethylene (ECTFE)  
Fluorinated Ethylene Propylene (FEP)  
Perfluoroalkoxy (PFA)  
Polychlorotrifluoroethylene (PCTFE)  
Polyetheretherketone (PEEK)  
Polyphenylene Sulfide (PPS)  
Polytetrafluoroethylene (PTFE)  
Polytetrafluoroethylene-perfluoromethylvinylether (MFA)  
Polyvinylidene Fluoride (PVDF)

### AMORPHOUS ENGINEERING THERMOPLASTICS

**Key Characteristics**  
Good dimensional stability  
Good to excellent impact resistance  
Moderate cost  
Moderate strength  
Moderate temperature resistance

**Materials**  
Chlorinated Polyvinyl Chloride (CPVC)  
Polycarbonate (PC)  
Polyphenylene Ether (PPE)  
Polyphenylene Oxide (PPO)  
Thermoplastic Polyurethane (TPU)

### SEMI-CRYSTALLINE ENGINEERING THERMOPLASTICS

**Key Characteristics**  
Difficult to bond  
Good bearing and wear properties  
Good chemical resistance  
Low coefficient of friction (COF)  
Moderate cost  
Moderate strength  
Moderate temperature resistance

**Materials**  
Acetal/Polyoxymethylene (POM)  
Nylon, Cast  
Nylon/Polyamide (PA)  
Polybutylene Terephthalate (PBT)  
Polyethylene Terephthalate (PET)  
Ultra-High Molecular Weight Polyethylene (UHMW-PE)

### AMORPHOUS COMMODITY THERMOPLASTICS

**Key Characteristics**  
Low cost  
Low strength  
Low temperature resistance

**Materials**  
Acrylic/Polymethyl Methacrylate (PMMA)  
Acrylonitrile-Butadiene-Styrene (ABS)  
Cellulose Acetate Butyrate (CAB)  
Polyethylene Terephthalate Glycol Modified (PETG)  
Polystyrene (PS)  
High Impact Polystyrene (HIPS)  
Polyvinyl Chloride (PVC)  
Polyvinyl Chloride and Acrylic Alloy Sheet (PVC/PMMA)

### SEMI-CRYSTALLINE COMMODITY THERMOPLASTICS

**Key Characteristics**  
Difficult to bond  
Good electrical properties, toughness  
Low coefficient of friction (COF)  
Low cost  
Low temperature resistance, strength  
Near zero moisture absorption

**Materials**  
High-Density Polyethylene (HDPE)  
Low-Density Polyethylene (LDPE)  
Medium-Density Polyethylene (MDPE)  
Polymethylpentene (PMP)  
Polypropylene (PP)

### AMORPHOUS KEY CHARACTERISTICS

Bond well using adhesives and solvents  
Easy to thermoform  
Poor fatigue resistance  
Prone to stress cracking  
Soften over a broad range of temperatures  
Structural applications only (not bearing and wear)  
Tend to be translucent or transparent (typically, but not always)

### SEMI-CRYSTALLINE KEY CHARACTERISTICS

Difficult to bond using adhesives and solvents  
Difficult to thermoform  
Good fatigue resistance  
Good for bearing and wear and structural applications  
Good resistance to stress cracking  
Sharp melting point  
Tend to be opaque

Performance (Chemical Resistance and Thermal Stability)