PLASTIC PROPERTY COMPARISON GRAPH

Operating Temperature
Short Term

Operating Temperature
Long Term (Constant)

Tensile Strength

Compressive Strength

Coefficient of Friction
(Lower has less friction)

Impact Strength
(The higher the impact the better)

Moisture Absorption

Cost Comparison

For more educational products, or to order additional or customized Thermoplastics Rectangles, contact

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### IMIDIZED

**Key Characteristics**
- Very high cost per pound
- Excellent physical properties above 400 degrees F
- Excellent electrical properties
- Excellent dimensional stability
- Low coefficient of friction (COF)

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

### AMORPHOUS HIGH PERFORMANCE THERMOPLASTICS

**Key Characteristics**
- High cost
- High temperature
- High strength and good stiffness
- Good chemical resistance
- Transparent
- Hot water and steam resistance

**Materials**
- Polysulfone (PSU)
- Polyetherimide (PEI)
- Polyparylsulfone (PAS)
- Polyarylethersulfone (PAES)

### AMORPHOUS ENGINEERING THERMOPLASTICS

**Key Characteristics**
- Moderate cost
- Moderate temperature resistance
- Moderate strength
- Good dimensional stability
- Good optical qualities
- Translucency

**Materials**
- Polycarbonate (PC)
- Polyphenylene Oxide (Mod PPO)
- Polyphenylene Ether (Mod PPE)
- Thermoplastic Polyurethane (TPU)

### AMORPHOUS COMMODITY THERMOPLASTICS

**Key Characteristics**
- Low cost
- Low temperature resistance
- Low strength
- Good dimensional stability
- Transparent (typically, but not always)

**Materials**
- Acrylic (PMMA)
- Polystyrene (PS)
- Acrylonitrile Butadiene Styrene (ABS)
- Polyvinyl Chloride (PVC)
- Polyethylene Terephthalate Glycol (PETG)
- Cellulose Acetate Butyrate (CAB)

### AMORPHOUS KEY CHARACTERISTICS

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

### SEMI-CRYSTALLINE HIGH PERFORMANCE THERMOPLASTICS

**Key Characteristics**
- Moderate cost
- Moderate temperature resistance
- Moderate strength
- Good chemical resistance
- Good bearing and wear properties
- Low COF
- Difficult to bond

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

### SEMI-CRYSTALLINE ENGINEERING THERMOPLASTICS

**Key Characteristics**
- Moderate cost
- Moderate temperature resistance
- Moderate strength
- Good chemical resistance
- Good bearing and wear properties
- Low COF
- Difficult to bond

**Materials**
- Nylon (PA)
- Acetal (POM)
- Polyethylene Terephthalate (PET)
- Ultra High Molecular Weight Polyethylene (UHMW-PE)

### SEMI-CRYSTALLINE COMMODITY THERMOPLASTICS

**Key Characteristics**
- Low cost
- Low temperature resistance, strength
- Low COF
- Near zero moisture absorption
- Good electrical properties, toughness
- Difficult to bond

**Materials**
- High Density Polyethylene (HDPE)
- Low Density Polyethylene (LDPE)
- Polylpropylene (PP)
- Polymethylpentene (PMP)

### SEMI-CRYSTALLINE KEY CHARACTERISTICS

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