Thermoplastics Triangle

Find plastic materials for your application with this selection tool.

HIGH SERVICE TEMPERATURE **HIGH COST** Vespel® PI** Torlon® PAI 500°F approximate maximum*

HIGH PERFORMANCE

IMIDIZED MATERIALS

- · Best physical properties above 400°F
- Best temperature resistance
- High temperature, high load bearing and wear capabilities (bearing grades)
- Good chemical resistance

AMORPHOUS HIGH PERFORMANCE MATERIALS

- High service temperatures
- High strength
- Hot water and steam resistance
- Thermoformability

350°F approximate maximum*

Radel® R **Ultem®** Polysulfone

350°Ft approximate maximum* PEEK®

PPS PTFE PVDF (Kynar®)

SEMI-CRYSTALLINE HIGH PERFORMANCE MATERIALS

- High service temperature
- Excellent chemical resistance
- High purity

AMORPHOUS ENGINEERING PLASTICS

- General purpose structural parts
- Moderate strength
- Moderate temperature
- Good dimensional stability
- Good Izod impact
- · Easily fabricated

250°F

Polycarbonate Noryl® PPO

250°F approximate maximum*

PET PRT Nylon Acetal

SEMI-CRYSTALLINE ENGINEERING PLASTICS

- General purpose bearing and wear or structural parts
- Moderate strength and stiffness
- Good chemical resistance
- Moderate temperature

AMORPHOUS COMMODITY PLASTICS

- Low temperature
- Low strength
- Good bondability
- Good machinability
- Good formability
- Low cost

180°F approximate maximum³

KYDEX®

Polystyrene **PVC ABS** Acrylic **PETG**

180°F approximate maximum*

Polypropylene Polyethylene (HDPE, LDPE, UHMW-PE)

SEMI-CRYSTALLINE COMMODITY PLASTICS

- Low temperature
- Low strength
- Good chemical resistance
- Low moisture absorption
- Low cost

GENERAL CHARACTERISTICS

AMORPHOUS PLASTICS

Softens over a wide temperature range Easy to thermoform Bonds well using adhesives or solvents Prone to stress cracking Poor fatigue resistance Structural applications only

SEMI-CRYSTALLINE PLASTICS

Sharp melting point Difficult to thermoform Opaque Good chemical resistance Difficult to bond using adhesives or solvents Resistant to stress cracking Good fatique resistance Good for bearing and wear (as well as structural applications)

GENERAL CHARACTERISTICS

*Materials should be considered for applications up to approximate maximum temperature. Selecting a plastic material for use in a high temperature environment requires careful review of material properties data. This chart is for comparison purposes only. **Vespel® is a thermoset.



