**THERMOPLASTICS SELECTION GUIDE** 

\*Many of these plastics can be made with fillers and additives that will enhance the physical properties.



#### **MATERIALS**

Polyimide (PI):

MELDIN®, VESPEL®, IMIDEX®, KAPTON®

Polyamide-imide (PAI): TECATOR®, TORLON®

#### **KEY CHARACTERISTICS**

Very high cost per pound - Excellent physical properties above 400<sup>o</sup> F Excellent electrical properties and dimensional stability



SHEET, ROD, TUBE, FILM...CUT TO SIZE

**Distributor to the World** Plastic Sheet, Rod & Film

#### • HIGH PERFORMANCE •

#### **MATERIALS**

Polysulfone (PSU) UDEL® Polyetherimide (PEI) ULTEM® Polyethersulfone (PES) RADEL A® Polyphenylsulfone (PPSU) RADEL R®

#### **KEY CHARACTERISTICS**

High cost High temperature High strength and good stiffness Hot water and steam resistance

# **KEY CHARACTERISTICS**

**MATERIALS** 

Perfluoroalkoxy (PFA)
Polychlorotrifluoroethylene (PCTFE)
Polyphenylene Sulfide (PPS) RYTON®

Fluorinated Ethylene Propylene (FEP)
Polyetheretherketone (PEEK) VICTREX®
Polytetrafluoroethylene (PTFE) TEFLON®

(PTFE with Fillers) RULON® Ethylene-Tetrafluoroethylene (ETFE) TEFZEL® Polyvinylidene Fluoride (PVDF) KYNAR®, SOLF®

Ethylene-Chlorotrifluoroethylene (ECTFE) HALAR®

• HIGH PERFORMANCE •

High cost High temperature High strength Good chemical resistance and electrical properties

### ENGINEERING

#### **MATERIALS**

Higher Cost, Temporature and Strength Polycarbonate (PC) HYZOD®, LEXAN® Polyphenylene Oxide (Mod PPO) NORYL® Thermoplastic Polyurethane (TPU) ISOPLAST®

#### **KEY CHARACTERISTICS**

Moderate cost Moderate temperature resistance Moderate strength Good-excellent impact resistance

# • ENGINEERING •

#### **MATERIALS**

Polyamide (PA) NYLON® Polybutylene Terephthalate (PBT) HYDEX 4101® Polyoxymethylene (POM) Acetal - DELRIN®, CELCON® Polyethylene Terephthalate (PET) TECAPET™, ERTALYTE® High Temp-Ultra High Molecular Weight Polyethelene (UHMW-PE) TIVAR H.O.T.

#### **KEY CHARACTERISTICS**

Moderate cost Moderate temperature resistance Moderate strength

# COMMODITY

#### **MATERIALS**

Polystyrene (PS)
Polyvinyl Chloride (PVC)
Acrylic (PMMA) PLEXIGLAS® Cellulose Acetate Butyrate (CAB) Acrylonitrile Butadiene Styrene (ABS) Polyethylene Terephthalate Glycol (PETG) VIVAK®

#### **KEY CHARACTERISTICS**

Low cost Low temperature resistance Low strength

### COMMODITY

#### **MATERIALS**

Polypropylene (PP) High Density Polyethylene (HDPE) Low Density Polyethylene (LDPE) Ultra High Molecular Weight Polyethylene (UHMW-PE) TIVAR®, LENNITE®

#### **KEY CHARACTERISTICS**

Low cost Low temperature resistance Low strength

# AMORPHOUS PLASTICS •

**GENERAL CHARACTERISTICS** 

#### STRUCTURAL APPLICATIONS ONLY (NOT SUITABLE FOR BEARING AND WEAR)

- Soften over a broad range of temperature
- Easy to thermoform
- Tend to be translucent or transparent
- Bond well using adhesives and solvents
- Prone to stress cracking
- Poor fatique resistance
- Poor chemical resistance

# SEMI-CRYSTALLINE PLASTICS •

**GENERAL CHARACTERISTICS** 

## **GOOD FOR BEARING AND WEAR AS WELL AS STRUCTURAL APPLICATIONS**

- Sharp melting point
- Difficult to thermoform
- Tend to be opaque
- Difficult to bond using adhesives and solvents
- Good resistance to stress cracking
- Good fatique resistance
- Good chemical resistance
- Low coefficient of friction