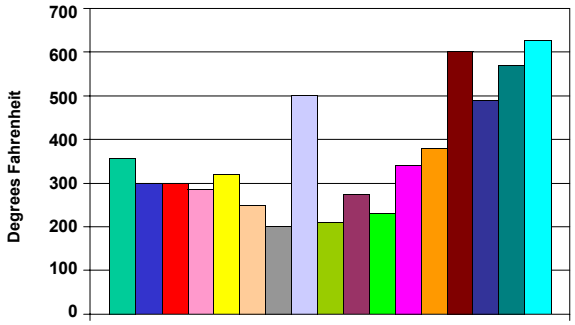
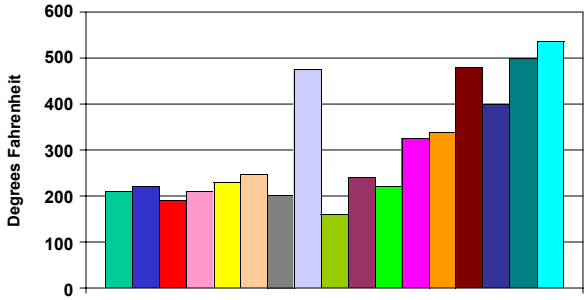
PLASTIC PROPERTY COMPARISON GRAPH

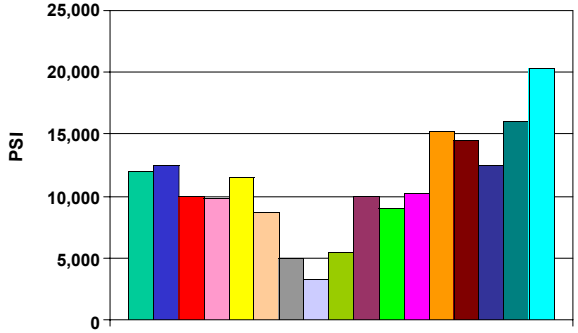
Operating Temperature
Short Term



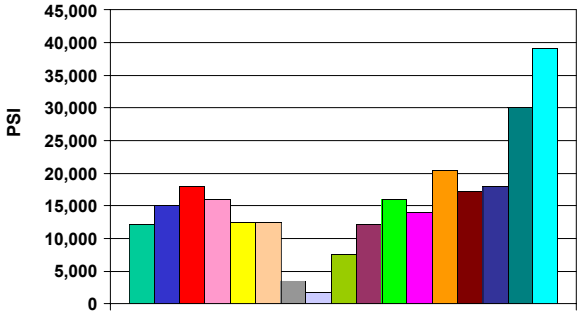
Operating Temperature
Long Term (Constant)



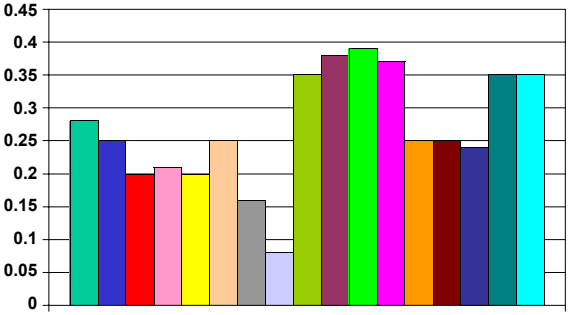
Tensile Strength



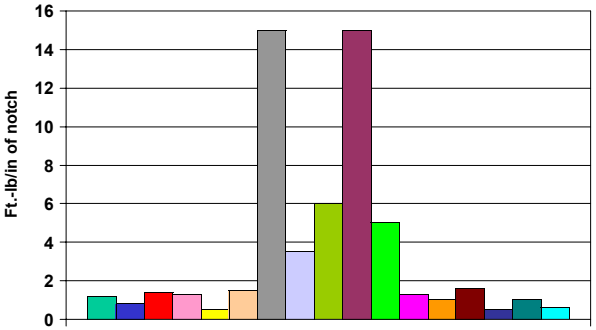
Compressive Strength



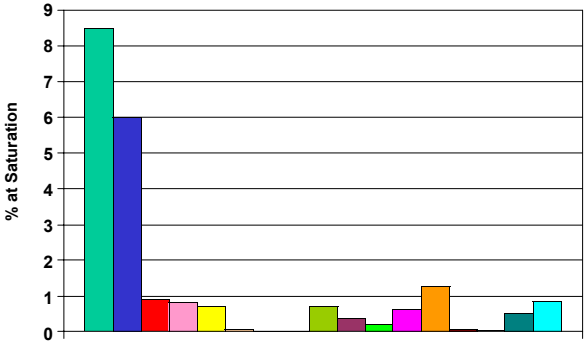
Coefficient of Friction
(Lower has less friction)



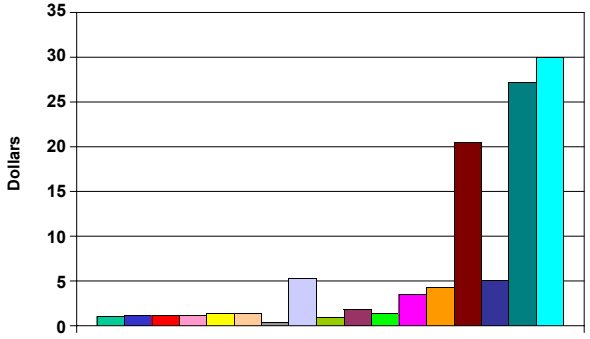
Impact Strength
(The higher the impact the better)



Moisture Absorption



Cost Comparison



- Nylon 6/6
- Cast Nylon
- POM
- POM Copolymer
- Polyester PET-P
- Polyester PBT
- UHMW-PE
- PTFE
- ABS
- PC
- PPO
- PSU
- PEI
- PEEK
- PPS
- PAI
- PI

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IAPD THERMOPLASTICS RECTANGLE

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of plastics distribution

High Strength
High Temperature
High Cost

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
Polyimide (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)
Polyethersulfone (PES)
Polyarylsulfone (PAS)
Polyarylethersulfone (PAES)

SEMI-CRYSTALLINE HIGH PERFORMANCE THERMOPLASTICS

Key Characteristics
High cost
High temperature
High strength
Good chemical resistance
Good electrical properties
Low COF
Good toughness

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

AMORPHOUS ENGINEERING THERMOPLASTICS

Key Characteristics
Moderate cost
Moderate temperature resistance
Moderate strength
Good to excellent impact resistance
Good dimensional stability
Good optical qualities
Translucency

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

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)
Polybutylene Terephthalate (PBT)
Ultra High Molecular Weight
Polyethylene (UHMW-PE)

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 Terepthalate Glycol (PETG)
Cellulose Acetate Butyrate (CAB)

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)
Polypropylene (PP)
Polymethylpentene (PMP)

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 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