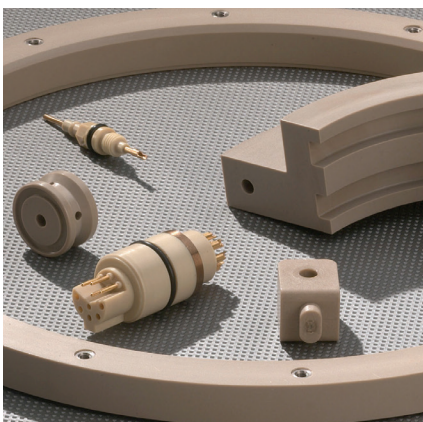


Explanation of Plastic Types



Amorphous

- Tough
- Rigid
- Good mechanical strength (higher with glass/carbon)
- Good chemical resistance (poor in aromatic hydrocarbons)
- Wide thermal operating range
- Excellent creep resistance
- Excellent dimensional stability
- Fair/good H₂O resistance
- Very good machinability
- Continuous use temperature below T_g (glass transition temperature)

Example

- PES (polyethersulfone), PEI (polyetherimide), some polyimides

Crystalline

- Resilient
- Elastic
- High mechanical strength (higher with glass/carbon)
- Excellent chemical resistance
- High continuous use temperature (above T_g)
- Good creep resistance (improved with fillers)
- Fair dimensional stability, if molded and annealed properly
- Very good machinability

Example

- PEEK (Polyetheretherketone)

Conventional Thermosets

- Hard
- Brittle
- Fair/poor mechanical strength (fillers necessary)
- Good chemical resistance
- Very wide operating range
- Excellent creep resistance
- Excellent dimensional stability
- Very poor H₂O/steam resistance
- Poor to excellent machinability, depending on specific grade of material

Example

- Epoxy, BMI (bismaleimide), some polyimides

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