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 Tg (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 Tg)
• 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