About Plastics

● Excellent ◓ Good

Use the charts below to identify the best plastic for your application. Circles indicate that a majority of a material's shapes and sizes meet the applicable rating. Blank boxes indicate a poor rating or no rating. Information is intended for comparison only and is given without obligation or liability.

Clear Multipurpose Plastic								
	Maximum Temp., °F	Minimum Temp., °F	Tensile Strength	Impact Strength	Chemical Resistance	Slippery	Machin-ability	Electrical Insulator
PETG	140°	–40°	◓	◓	◓			
Acrylic	160°	32°	◓				◓	◓
Cast Acrylic	170°	–40°	◓				◓	◓
Cellulose	170°	50°		◓				◓
Polycarbonate	180°	–40°	◓	●			◓	◓

Clear Selector Pack—Contains the 5 plastics listed above; each is approximately 2" × 2" and up to 1/2" thick. Select 5331K5.

Multipurpose Plastic								
	Maximum Temp., °F	Minimum Temp., °F	Tensile Strength	Impact Strength	Chemical Resistance	Slippery	Machin-ability	Electrical Insulator
UHMW	180°	-20°		●	◓	◓	◓	●
LDPE	120°	50°		●	◓			
HDPE	180°	50°		◓	◓		●	
Nylon	185°	-40°	●	◓			◓	◓
Cast Nylon	200°	-20°	●			◓	●	●
Derlin®Acetal	180°	-20°	◓	◓		◓	●	●
Polyester	230°	40°	●				◓	◓
ABS	140°	50°	◓	●			●	●
Polystyrene	155°	0°		◓			●	●
Rexolite Polystyrene	212°	-75°	◓	◓				●
Noryl PPO	220°	-40°	◓	◓			●	●

General Purpose Selector Pack—Contains the 15 plastics listed above; each is approximately 2" × 2" and up to 1/2" thick. Select 5331K7.

High-Temperature Plastic								
	Maximum Temp., °F	Minimum Temp., °F	Tensile Strength	Impact Strength	Chemical Resistance	Slippery	Machin-ability	Electrical Insulator
PEEK	480°	-20°	●	◓	◓		●	◓
PFA	500°	-320°		●	●	◓		●
Ultem PEI	335°	-20°	●				◓	●
Torlon PAI	500°	-320°	●		◓	◓	◓	
Polyimide	550°	-425°	●		◓		◓	●

High-Temperature Selector Pack—Contains the 11 plastics listed above; each is approximately 2" × 2" and up to 1/2" thick. Select 5331K9.

Additional Plastics

Static Control: Antistatic Polycarbonate, Antistatic Cast Acrylic, Conductive ABS/PVC, Antistatic Acetal, Static-Dissipative UHMW,Conductive UHMW, Antistatic PTFE

Self-Lubricating: MDS-Filled Nylon, Oil-Filled Cast Nylon, Turcite Acetal, Hydex Polyester, Oil-Filled UHMW, Rulon PTFE,Carbon-Filled PEEK

Reinforced: Glass-Filled Polycarbonate, Strengthened Acrylic, Strengthened PVC, Glass-Filled Nylon, Glass-Filled Acetal, Glass-Filled UHMW, Glass-Filled PTFE.

View detailed information about the features above and additional physical properties.

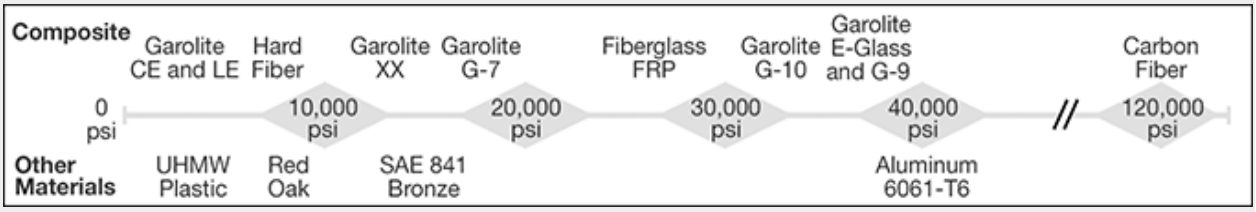
For information about plastic laminates, such as hard fiber, fiberglass, Garolite, and carbon fiber please see About Plastic Laminates.

About Plastic Laminates

Hard fiber, fiberglass, Garolite, and carbon fiber (also referred to as plastic laminates and composites) are usually created by combining fiber, paper, or fabric with epoxy or resin. Commonly called thermosets because they are created by setting under heat, they have very different properties than more common plastics such as polyethylene and nylon. They are not designed to be heated, so you cannot bend and form them.

Fiberglass and Garolite Material Selector Pack—Includes one individually marked piece of electrical-grade fiberglass (GPO3) and the following grades of Garolite: XX, CE, LE, G-9, G-10, G-11, and G-7. Each piece is 2" × 2" × 1/16". **To Order:** Select 5331K3.

Tensile Strength—Refers to the amount of stretching a material can withstand before breaking. E-glass and glass carbon are not rated for tensile strength.



Electrical Insulation—All plastic laminates have some electrical insulating capabilities. Ratings are based on their relative insulating (dielectric) strength, which is the maximum voltage the material can withstand. E-glass, glass carbon, and carbon fiber do not have an electrical insulation rating.

Excellent	Good	Poor
G-11	G-10, G-10/FR4, G-9, XX, G-7, GPO3	Hard Fiber, FRP, CE, LE

Machinability—Plastic laminates are difficult to machine; carbide or diamond-tipped tools are generally required when machining to achieve the best results. The machinability ratings below are based on speed, life of the tooling, and the level of ease to attain a satisfactory finish.

Good	Fair	Difficult
Hard Fiber, XX, CE, LE, Glass Carbon	GPO3, E-glass, Carbon Fiber	FRP, G-9, G-10, G-10/FR4, G-11, G-7

Moisture Resistance—The base material affects the amount of moisture absorbed into the laminates. Cloth-based laminates have a higher absorption rate than laminates with other base materials. E-glass, glass carbon, and carbon fiber are not rated for moisture resistance.

Excellent	Good	Fair	Poor
G-10, G-10/FR4, Carbon Fiber, G-11, GPO3	G7, G-9	FRP	Hard Fiber, CE, LE, XX