

## Benefits of Urethane

### Abrasion Resistance

Urethane will outperform rubber, plastic or metal by a margin of 5 to one in severe [abrasion](#) and wear applications.

### Adhesion

Urethane prepolymer formulations can be [adhesively](#) bonded to most metals or virtually any other material, whether rigid or flexible. Cast bonding systems can be designed to produce bonds that are often stronger than the urethane itself.

### Chemical Resistance

Urethane prepolymer formulations have excellent [resistance](#) to most solvents, chemicals, aliphatic based oils, and greases.

### Coloring

Color variation available upon request.

### Dimensional Stability

Urethane [prepolymer](#) formulations have excellent dimensional stability over a broad range of temperatures and pressures. Urethane's also have excellent [elastomeric](#) memory. They can be stretched (even at high hardness) to substantial elongations and return to their original dimensions.

### Electrical Properties

Urethane prepolymer formulations offer a combination of electrical properties, such as dielectric strength, dielectric constant, resistivity and power factor. Urethane is an excellent insulating material. Depending upon the formulation, its volume of resistivity is in the range of 10<sup>10</sup> to 10<sup>11</sup> ohm-cm. With additives, urethane can also be formulated to be electrically [conductive](#).

### Environmental Resistance

Urethane is substantially inert in the presence of ozone and oxygen. It is more resistant than natural or synthetic rubber to sunlight and general weather conditions.

### Flex Properties

Urethane prepolymer formulations offer extremely high [flex-life](#) and can be expected to outlast other elastomeric materials where repeated flexing is an important requirement.

### Friction Coefficients

Urethane can be formulated to offer various [coefficients of friction](#) that will remain permanently in your compound. This is usually not possible with other elastomers which may continue to cure, harden, or soften over their usual life, with resultant changes in the coefficient of friction.

### Hardness

Urethane prepolymers can be formulated to cover a wide [range of hardness](#), from 20 Shore A [durometer](#) (the hardness of a rubber band) to 75 Shore D durometer (the hardness of bone).

### Hydrolytic Stability

Polyether based urethane prepolymer formulations have superior hydrolytic stability. They absorb practically no water (barely 0.3% to 1% by weight) and are suitable for applications requiring immersion.

### Impact Resistance

With even the hardest urethanes, you can achieve significantly better [impact resistance](#) than plastics and composites. While conventional plastic materials can become brittle as they become harder, urethane retains elasticity and strength over the complete [range of hardness](#).

### Load-Bearing Capacity

Compared to other elastomers of equal hardness, urethane prepolymer formulations have a greater load-bearing capacity.

### Machinability

Harder formulations can be drilled, tapped and machined like metal; softer materials can be ground.

### Resilience

Urethane prepolymers can be custom formulated to give hard polyurethanes similar resiliency as much softer materials, making urethane an excellent material for shock/vibration absorption.

### Sound Dampening Properties

Urethane has superior sound dampening properties. Hard durometers are being used in gears and other applications where sound reduction is desired. Soft durometers are being used to replace rubber for improved sound/vibration dampening.

### Tear Strength

Urethane ranges between 250-1000 lbs/linear inch, which are far superior to rubbers in all applications. As a result, urethane is often used as drive belts, seals, diaphragms, roll covers, cutting pads, gaskets, and chute liners.

### Temperature Resistance

Urethane prepolymers can be formulated to operate dependably at 250°F and intermittently at 300°F. Urethane is not recommended in hot water over 175°F. At low temperatures urethane will retain a degree of elastomeric properties at -80°F. A gradual stiffening will occur at 0°F but will not become pronounced until much lower temperatures are obtained.

### Tensile Strength

Urethane can be formulated with [tensile strengths](#) to 8,000 psi while maintaining elastic characteristics.

**Tooling Cost**

As a liquid cast material, tooling costs are very low—significantly less than making metal molds.

**Toughness**

Urethane is non-brittle even at higher hardness and resists fracture during shock or [impact loading](#).