

# Discover the Benefits of Polyurethane Over Metal and Rubber

## Material Substitution

by Lisa Prushinski

**D**id you know cast polyurethane is a viable alternative to plastic, metal or rubber for a wide variety of applications? It is one of the most versatile and durable materials, with properties engineers and designers may not be aware of. Its outstanding performance and cost effectiveness are the reasons it has increasingly become the material of choice when faced with a high wear challenging application.

Understanding the term “polyurethane” is important because it is applied to many kinds of materials. Polyurethane materials fall into the following categories: castable elastomers, foams — rigid and flexible, microcellular shoe soles, adhesives/sealants, thermoplastics, millable gums and coatings.

Cast polyurethane can be as flexible as a rubber band or as rigid as certain metals and is particularly suitable for parts requiring high load bearing, abrasion resistance, long flex life, cut and tear resistance and durability. This unique elastomeric material is six times lighter than steel, significantly easier to form into simple or complex shapes and is resistant to corrosion.

Polyurethane is tougher and more resistant to wear or fatigue than most plastics. It performs well in many applications requiring hydrolytic stability and/or chemical resistance.

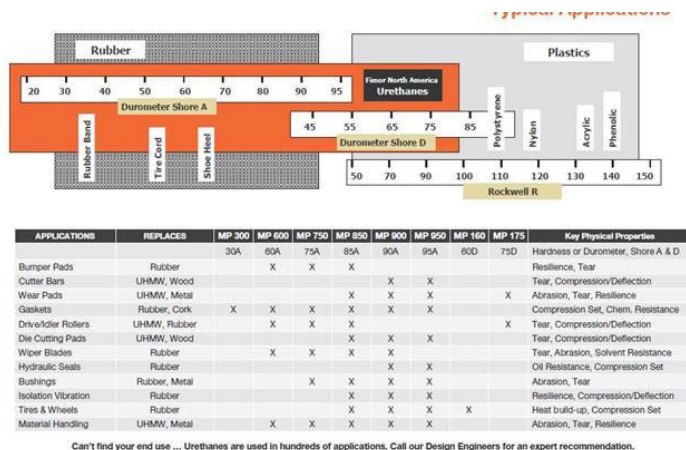
Not all cast polyurethanes are the same; they come in a variety of compositions each having its attributes and shortcomings. To optimize applications engineering it is essential to appraise each end use first, then select the particular cast polyurethane that meets the criteria for both economics and performance. Consult a performance plastics professional for help selecting the best shape, hardness and formulation to match your requirements and optimize the exceptional characteristics of cast polyurethanes.

- High load-bearing capacity (tension, compression, shear) and resilience (rebound or shock absorption)
- Resistance to high and low temperatures
- Overmolding other materials
- Low, unlubricated and coefficient of friction
- Excellent abrasion resistance
- Quieter than metal or plastic parts
- Greater tolerance for mating parts (compared to metal)

Polyurethane is used in aerospace, agriculture, automotive, construction, conveyors, mail-sorting, oil and gas, recycling, military, sports and recreation applications, just to name a few. In the mining industry, parts and materials must be strong to withstand harsh chemical and environmental conditions at remote mining sites. Polyurethane is ideal for conveyor belt scrapers, seals, and pipelining. In sporting goods, polyurethane is preferred for its ability to withstand high impact situations and its abrasion resistance.

Polyurethane is readily available in several standard shapes, colors and hardness ranging from 10shA to 70shD available through distribution (sheets, rods, tubes and bars). These can be cut or machined to size and shape. In addition, you can work with your performance plastics professional for custom projects and cost-effective parts from a single unit to thousands with the use of hand batch or computerized dispensing equipment.

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Polyurethane sheets, strips, rods, tubes and bars from Fimor North America/Harkness.

This urethane product selection guide can help you select the right material.