TYPES OF SEALING MATERIALS

Urethane

Formulated of copolymers of ether or ester based urethanes, this material is used in a wide application of seals, wipers, back-up rings, cushions, bumpers, and a myriad of other uses. Highly resistant to oil swell, ozone, oxidation and abrasion, it also has excellent cut resistance. Highly resilient, urethanes also have high tensile strength and elongation properties. Urethanes remain an excellent choice in hydraulic systems using petroleum based fluids. Most urethane seals remain flexible and efficient in temperatures ranging from -65˚ F to +200˚ F with some able to withstand intermittent temperatures up to +300˚ F.

Nitrile

The most common nitrile copolymer blend is the compound known as Buna-N. Possessing very good resistance to petroleum based hydraulic oils, Buna-N also works well with fuels such as diesel or gasoline. Nitrile seals have a good resistance to compression set, but their flexibility suffers somewhat in the lower temperature range. Seals made from this material have a low resistance to ozone and must be stored carefully in most environments. Working temperatures are -40˚ to +240˚ F.

PTFE

Most PTFE seals, in order to retain their toughness and flexibility, are fortified with short glass fiber, bronze flashes, carbon, graphite, or a combination of these fillers. Because of a lack of resilience (memory) in PTFE, an energizer is most often employed to obtain the desired fit. Benefits are chemical inertness, high heat resistance, low temperature flexibility, low running friction, and non-adhesive characteristics. Temperatures to +500˚ F are obtainable but are often reduced by the filler or energizer employed.

Fluorocarbon

Fluorocarbon combines high temperature resistance with excellent chemical resistance. Excellent for use with alcohol and aromatic fuels and highly resistant to ultraviolet light and ozone. This material is not recommended for use in low temperatures or in aircraft hydraulic fluids. Temperature range is -20˚ to +400˚ F.

Ethylene-Propylene

Ethylene-Propylene can be used for sealing phosphate ester hydraulic fluids such as Skydrol. Not suitable for petroleum based fluids, Ethylene-Propylene is highly effective for use with steam, acetone, dilute acids and alkalies. Specially compounded Ethylene-Propylene can be made suitable for automobile brake systems. Temperature range from -20˚ to +300˚ F.

Silicone

Silicone is an elastomer made from silicon, oxygen, hydrogen, and carbon. The key use of this material is in static seals employed in a wide (-75˚ F to +450˚ F) range of temperatures. Silicone has a high resistance to dry heat, ultraviolet light and ozone. This material is not recommended for dynamic situations due to poor abrasion resistance and high friction characteristics.

Glossary of Terms