PTFE resin was discovered in 1938, but it wasn’t until the 1950s that it gained notice as a possible rotary lip seal material. However, PTFE (polytetrafluoroethylene) seals fell out of favor in the 1950s and 1960s, as they were shown to be unreliable performers in a number of applications.

In more recent decades, there has been significant progress in the areas of PTFE lip seal design and material processing.

**How Does It Work?**

A PTFE rotary lip seal is a seal that features a lip on the ID that fastens dynamically on a shaft and metal casing on its OD to press-fit into a bore.

Between the layers of sealing lips and the can is sandwiched a gasket, in order to seal off the potential leak path. Because the lip is not spring-energized, the radial lip contact forces are lower than a rotary spring energized PTFE seal, which allows the seal to function at much higher surface speeds (up to 10,000 sfpm.)

These seals are made from a wide range of PTFE composites and other machinable plastic materials. Standard gasket choices are fluocarbon, nitrile, EPDM and Armstrong reinforced paper.

A design engineer can choose between stainless steel, cold rolled steel, zinc-plated cold rolled steel and aluminum. This broad foundation of standard gasket, metal and PTFE materials can be tailored to suit nearly all applications. Standard and non-standard seal profiles are precision-machined to fit inch and metric gland geometries. PTFE rotary lip seals are used in demanding applications where operating conditions exceed the capabilities of elastomeric seals.

**Features**

*Among the features and benefits of PTFE lip seals*

- Low friction, long seal life with proper configuration
• Strong chemical resistance
• Surface speeds of up to 10,000 spfm
• Wide temperature range — -65 degrees F to 450 degrees F (-53 degrees C to 232 degrees C)
• High pressure in excess of 500 psi (35 bar)
• Extended seal life in dry or abrasive media
• Unlimited shelf life
• Large diameter capability
• Custom design profile

**PTFE seal applications include:**

• Motors
• Gearboxes
• Pumps
• Bearings
• Compressors
• Cryogenics
• Extruders
• Valves
• Blowers
• Spindles
• Mixers
• Robotics

To learn more about PTFE lip seals, download Gallagher Fluid Seals’ rotary seal guide.