

# CUSTOM MOLDED SEALS & WIPERS

## Rubber-Energized, PTFE Seals

### Get Better Performance During High-Speed and Dry Running Conditions

#### Seals Made from Rubber-Only Assemblies Fall Short

Seals made from rubber-only compounds fail to perform. First, rubber-only seals are not designed for fuel efficiency. Second, seal manufacturers using seals made from rubber-only material are unable to produce components that can stand up to extremely high temperatures and not fall apart when exposed to a high-friction or abrasive environment. *So what is the solution?*

#### Strategic Engineering Creates a Durable Low-Coefficient Seal

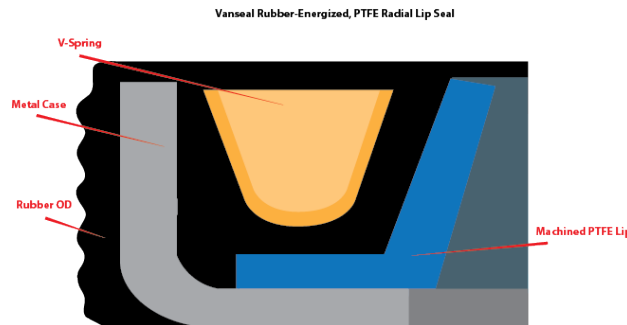
PTFE elements built into the design of a seal creates a more durable assembly. The use of PTFE as a compound is used today in many types of component manufacturing. Its near universal chemical resistance and ultra-low coefficient of friction make it especially attractive to the motor vehicle industry because lower friction robs less power and fuel-consuming drag on moving parts.

#### Design Drives a Better Seal Solution

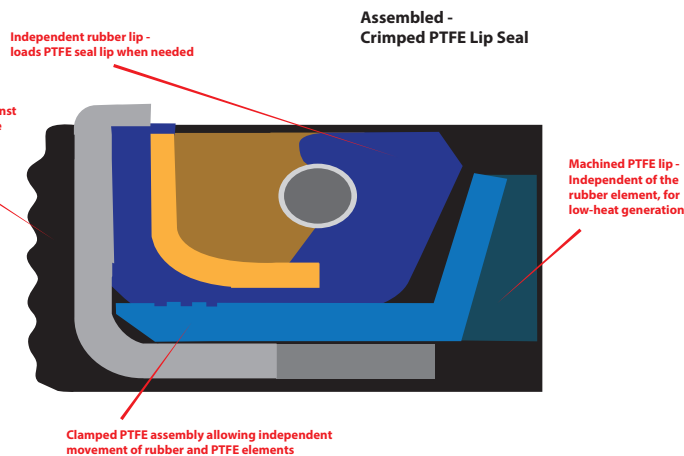
A PTFE material is susceptible in one area - elasticity. It does not have the same ability to return to an original shape as quickly as rubber-based components. Therefore PTFE-only seals are less efficient at following the shaft to maintain a fluid or gas barrier. For example, when a shaft moves in an orbital or eccentric path, as caused through misalignment of the assembly, the seal will not remain tight and leakage may occur.

A better seal can be made with reinforcing elements built into the design. Adding a garter spring to the circumference of the seal lip aids in the component's ability to remain in contact with the shaft during operation.

However, placement of the garter spring can create a different problem. When the seal remains in contact with the shaft, a high, localized loading of the lip is the result. As such, the build-up of frictional heat can elevate under-lip temperatures.



- Radial lip seals
- Hydraulic rubber seals
- Rapid prototyping
- Overmolding
- Assembly
- Tooling
- Seal testing



Founded 1956  
Vandalia, Illinois

Vansal is a premier designer and manufacturer of radial lip and hydraulic rubber seals and mechanical seal components.

We generally serve customers in the commercial, off-highway, agricultural, fluid power, recreational vehicle and aerospace industries.



Vansal Headquarters  
815 Payne Dr.  
Vandalia, IL 62471



Submit a quote:  
**(618) 283-4700**  
vansalcorp.com

# Rubber-Energized, PTFE Seals

## **Solution Centers on Loading the Seal**

To prevent component failure due to heat, a solution was identified which centers around two ways to load the PTFE lip.

1. Assembly design utilizes an independent rubber element to provide radial force to the PTFE sealing lip
2. Rubber element is positioned in the design so it only comes into play and loads the PTFE lip when needed

## **Tested Successfully for Central Tire Inflation**

Vanseal has been improving seal design for over 60 years. Most recently this PTFE assembly was tested in a seal design used in central tire inflation. Typically seals created for this type of application are outside the scope and capability of commodity-based seal houses. The challenge is that these types of seals have specific limitations on the allowable heat generated.

## **Applications are Almost Endless**

The Vanseal Rubber-Energized, PTFE Radial Lip Seal is now a pre-tested design that can be applied to any application wherein a seal must withstand exposure to extremes in heat, shaft speed or harsh chemicals.

- Fan Clutches
- Central tire inflation
- Fluid pumps
- Hub seals
- Compressors
- Superchargers
- Turbochargers
- Transmissions

## **Bring Your Design Challenges to Us**

Part design is critical to the success of a project. Since 1956 Vanseal has served the custom seal needs for a variety of industries. Customers can rely on Vanseal as a trusted partner because - we know seals. Our pre-tested solutions bring your projects on line quickly and provide the highest level of confidence in seal design.