

Mechanical Seal Faces:

Mechanical seal choices have become increasingly popular in the Pump industry. Many companies develop a set of pump seal specifications to make it easier for their people to select one or more seals for an application. The lack of a company specification can cause problems with inventory, installation and interchangeability of seals. Many plants are accepting seal components with unidentified and/or inferior materials, making troubleshooting a nearly impossible task for them.

A good company specification for pump seals will include the following:

- *Pump Seal materials with the widest range of chemical compatibility,*
- *Pump Seals that are easy to install,*
- *Pump Seals with features that make seal repair easy and low cost,*
- *Pump Seals that require the least amount of inventory and spare parts,*
- *Pump Seals that operate over a wide range of temperature, pressure and speed, and*
- *Pump Seal designs that allow the easiest conversion of packed pumps to pump seals*

From an article from American Seal and Packing Co.

Carbon – Carbon Graphite

Carbon seals. The old standby. Carbon, or Carbon Graphite seals offer the greatest economy and lubricity for sealing non-abrasive products. It's good for clean, abrasive free materials. It self-lubricates to reduce heat and extend service life. It works great with all other seal materials.

Ceramic –

Generally, a 99.5% aluminum oxide offering excellent wear characteristics due to its hardness. It is chemically inert and can be applied to nearly any product. In the sanitary environment, Ceramic offers the best resistance to sticky liquids like syrups. Ceramic cannot however handle the thermal shocks. It has zero tolerance for thermal expansion and easily cracks or shatters. Like most other materials, it wants to expand with the heat, but it cannot. Ceramic is much more resistive to abrasive materials than carbon. It's wear resistant, corrosion resistant, and cheap. It is most commonly paired with carbon. It is limited only by extreme heat.

Silicon Carbide –

Is a bluish-black material created by fusing silica and coke. It is in the same family as Ceramic (due to the Silica), but has much better lubrication qualities and is harder. It contains no silicon that can leach into the process, is excellent in an oxidizing environment, and has good thermal shock resistance due to low thermal expansion coefficient and high thermal conductivity.

In summary, silicon carbide's combination of hardness, strength, and temperature resistance gives it excellent capabilities for services in a wide range of applications where high speeds, high pressures, and chemical and abrasion resistance are required.

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