

Pump Seals in Brewery Process Applications –by Jim McCormick

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The recent surge in growth of the Craft Brewing industry has brought about many new opportunities. It has also brought with it some challenges especially when speaking about the seal. Many of today's brewers are batching at very high temperatures and an unwitting customer may overlook this and use Buna-N Rubber gaskets and O-Rings. Buna begins to break down at around 190 °F. At *SANI-PUMP*, we strongly recommend FKM elastomer materials on our C- Series pumps for brewing applications.

Another obstacle is the ingredients used in today's beers and ales. Any type of abrasive elements like coffee, cocoa, spices and such can become trapped between the sealing surfaces and can compromise the carbon rotating element and the stainless steel back plate surface in very short order.

When transferring wort to the fermenter, you may see an excessive amount of a sticky substance that looks a lot like caramel around the sealing area. This is sugar produced by malts during the mash process. Yeast is then added and it breaks down most of the sugars, but depending on what's brewing, it cannot break down all of it. The product is then pumped over to the fermentation vessel.

When it cools, the sugar crystallizes and, in effect, glues the carbon rotating element to the stationary surface. When the pump is re started, the initial torque is going to break that binding loose and occasionally it cracks or breaks the carbon. This is why we recommend the External Mechanical Seal, with a Carbon Rotating Seal and a Silicon Carbide Stationary Seal, FKM trim. It is far more durable to high temperatures and offers better lubricity. Always steer clear of Ceramic Seals in brewing. It cannot withstand the thermal shock from the high temperatures normally found in breweries. It has zero tolerance for thermal expansion and easily cracks or shatters.

We also offer our Water Cascade assembly. This option gives the user the ability to drip a very low flow of water to the seal to cool and lubricate it. In addition, it helps to clean the seal of sticky substances when the pump shuts down. These substances tend to cake, or crystalize when cooled down. This combination will allow for higher temperatures and the ability to pump small abrasive and / or sticky ingredients. It helps to cool, clean and lubricate the seal.

As with any sanitary centrifugal pump, our pumps should never be allowed to run dry.

Pictures below show seal from brewery with sugar buildup, and water flush assembly.

