



Mechanical Seal Analysis (MSA)

Date	12/8/21	Pump Position	P112J
MSA #	2021-056	Seal Manufacturer	FSI
Inquiry #	I-21-0127	Seal Model	MS1030SP0048-2286
Customer	Anchor Seals	Shaft Size	3.00"
Customer Ref #	12257283	Drawing #	FSI-2286
End User	USS Clairton Works	Seal Serial #	02234-R01
Pump House	TEC	Inboard Rotary Material	Silicon Carbide
Contact	Brandon Spithaler	Inboard Stationary Material	Tungsten Carbide
Phone	412-865-2101	Outboard Rotary Material	-
Salesperson	Brandon Spithaler	Outboard Stationary Material	-
		Elastomers	Kalrez 6375

General Seal Condition

The seal was removed assembled and covered in product.



Figure 1: Seal Assembly

One flush port was found to be completely clear and the other had some debris and was slightly obstructed.

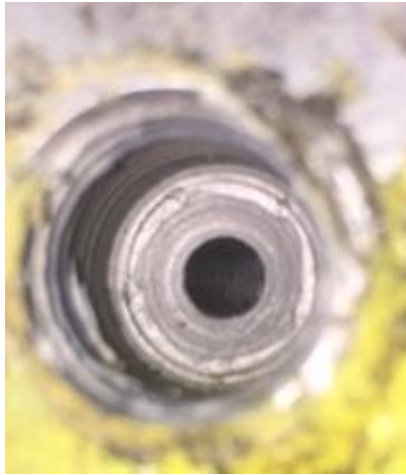


Figure 2 & 3: Flush Ports

Seal Face Conditions

The Tungsten Carbide stationary face showed an even wear pattern.



Figure 4 & 5: Stationary Face

The Silicon Carbide rotary face showed an even and concentric wear pattern. There were a few small divots in the sealing face showing signs of possibly blistering.



Figure 6: Rotary Face

Elastomers

All Kalrez O-rings were in fair condition for sealing purposes.



Figure 7 & 8: O-Rings

Metal Components, Springs, Pins

All metal parts are in good working order. There is no signs of metal to metal contact.



Figure 9: Metal Components

The springs flexed freely upon removal.



Figure 10: Springs

Failure Explanation/Recommendation

Failure Explanation: The overall condition of the seal is in good condition. There are no signs of metal-to-metal contact. The elastomers are in fair condition. Based on the condition of the seal faces it is possible that the seal ran without sufficient lubrication across the seal faces. This is what could have resulted in the slight blistering on the rotary face. This would have resulting in a small visible leak.

Recommendation: Repair the seal and return it to service. Be sure to follow all manufacturers recommendations when installing the mechanical seal. Please properly prime the pump and seal prior to startup. Ensure an adequate seal flush is always provided to the seal.

Additional Note: This seal serial number was confirmed per plant walk through on 3/8/21. It has been in service prior to that date. A seal changeout was not provided for this pump/seal.