

**GPI** Has been working with this account since 1988 when we were picking up an average of **118** seals a year. We now have several more pumps we supply seals for and are now averaging **35** seal repairs a year, or less between 2003 and 2005. Not all being the seals fault. We would be more than happy to share our seal failure analysis training and ideas with your plant personnel. 1-800-624-7074

## PLANTS SEAL FAILURE HISTORY -- 1999 47 SEAL FAILURES

DATE	EQUIP. #	SEAL TYPE	SEAL SIZE	OBSERVATIONS	RED FLAGS
7/15/1999	34-Y084	222	3.5	Loss of bearing.	
10/14/1999	54-Y003	255	1.875	The drive lugs and outboard carbon worn down. Possible loss of barrier fluid.	
5/20/1999	54-Y004	255	1.875	Loss of bearing.	
10/8/1999	54-Y004	255	1.875	Possible loss of barrier fluid. Pitting of 316ss	
10/12/1999	54-Y005	255	1.875	Looks like this seal failed due to thermal shock to the seal faces.	
7/22/1999	67-XL1	155a	1.375	No data on this seal failure.	
6/5/1999	67-Y001	155c	1.75	Shaft "o"ring/ rotary "o"ring had severe chemical and/or heat attack.	
7/15/1999	67-Y002	155c	1.75	The T.C. face was leached out.	
7/15/1999	67-Y002	180	1.75	The Chemraz "o"rings had serious chemical attack.	
8/2/1999	67-Y002	155c	1.75	Uneven wear pattern on T.C. rotary.	
12/28/1999	67-Y002	180	1.75	This seal appears to have ran dry. Heat attacked stationary "o"ring.	
10/26/1999	67-Y003	155c	1.75	The rotary "o"ring was severely heat and chemical attacked. Possible dry running.	
3/18/1999	67-Y014	155c	1.375	Seal appears to have excessive runout.	
7/12/1999	67-Y018	155c	1.75	Particulate penetrated the seal faces, imbedding in the carbon.	
5/12/1999	67-Y022	180	1.75	Tangential flush port plugged, indicating loss of flush.	
4/29/1999	67-Y05A	155a	1.375	Brass throttle bushing corroded, causing springs to decompress.	
9/9/1999	67-Y094	155os	1.375	Product had adhered set screws to lock ring. Could not take seal apart to analyze.	
6/22/1999	67-Y097	155c	1.375	Severe corrosion under "o"rings on gland and sleeve.	
7/30/1999	67-Y097	155c	1.375	Severe corrosion under "o"rings on gland.	SOLUTION FOUND
9/1/1999	67-Y097	155c	1.375	Corrosion under "o"ring on gland. Rubbing on sleeve caused by crystal build up.	
9/25/1999	67-Y097	155c	1.375	This seal did not show any signs of failure.	
10/22/1999	67-Y097	155c	1.375	Corrosion at "o"ring on gland and sleeve..	
12/5/1999	67-Y097	155c	1.375	Quench port plugged with solids, appears to be a calcium like substance.	
10/29/1999	67-Y104	155c	1.75	Heavy corrosion on quench side of seal. Appears to have ran a long time.	
7/21/1999	67-Y138	123	1.75	Product polymerized in seal. Thermal shock to ceramic face.	
6/4/1999	67-Y143	155a	1.75	Product polymerized in seal.	
12/21/1999	67-Y150	155c	1.75	Seal packed with product. Possible loss of flush.	
10/12/1999	67-Y159	155	1.875	Product had solidified in seal. Pitting of 316ss sleeve.	
12/10/1999	67-Y159	155	1.875	Severe damage to gland and lock ring. Possible thrust bearing failure.	
6/7/1999	67-Y160	155	1.875	Seal totally destroyed. Bearing housing destroyed.	

10/11/1999	67-Y165	155c	1.75	Product built up in seal. Slight scoring of faces.	
9/25/1999	67-Y167	155	2.125	The seal was totally packed with Rytan powder. Heavy scoring on faces.	
2/12/1999	67-YA13	155os	1.375	Seal packed with polymer / excessive wear of faces.	
7/22/1999	67-YA13	155os	1.375	Seal packed with polymer / excessive wear of faces.Excessive pitting	
10/26/1999	67-YA13	155c	1.375	This seal was in excellent shape except for lots of crystalization on seal parts.	
8/15/1999	67-YA14	123	3.75	Horizontal split case, 2 seals, Loss of bearings or wear rings	
	67-YA5	180os	2.125	Did not see this seal before it was repaired on emergency.	<b>SOLUTION FOUND</b>
4/2/1999	67-YA5	180os	2.125	Product polymerized in seal.	
5/17/1999	67-YA5	180os	2.125	Product polymerized in seal.	
9/5/1999	67-YA5	180os	2.125	Heat discoloration on sleeve rotary holder and stationary ID. Heavy scoring of stationary.	
11/8/1999	67-YA5	180os	2.125	Product polymerized in seal. Acid washed slurry.	
11/17/1999	67-YA5	180os	2.125	Rubbing between gland and lock ring. Axial movement or installation problem.	
12/19/1999	67-YA5	180os	2.125	Loss of flush, or insufficient flush.	
12/27/1999	67-YA5	180os	2.125	Seal full of powder. Possible loss of flush.	
5/10/1999	67-YA6	180os	2.125	Product polymerized in seal.	
11/4/1999	67-YA6	180os	2.125	Swollen "O" rings, Drive pin wear, Face scoring, Acid washed slurry.	
1/20/1999		155c	1.375	Product appears to be crystallizing toward O.D. of carbon face.	